

Skila and Phil,

As listed below, here is some of the information you requested yesterday:

1. Section 3116 from "National Defense Authorization Act for Fiscal Year 2005" (Public Law 108-375 Oct. 28 2004)

- Additional information on the Section 3116 Waste Determinations:
The Ronald Reagan National Defense Authorization Act of 2005 clarified DOE's authority to classify and dispose on-site some portion of tank waste as other than high-level waste. As discussed yesterday, the law is applicable to Savannah River and Idaho, but not Hanford. To date, the Secretary has made 2 waste determinations under this authority – Saltstone disposal at SRS and 15 underground storage tanks at INL (11 of these tanks have since been closed).

2. DOE O 435.1: Radioactive Waste Management

website: <http://www.directives.doe.gov/cgi-bin/explhcgi?qry1419797555;doe-201>

3. DOE Report "Root Cause Analysis: Contract and Project Management" April 2008

website: <http://management.energy.gov/>

4. DOE Corrective Active Plan for "Root Cause Analysis Report" July 2007

website: <http://management.energy.gov/>

5. NAPA Report "Office of Environmental Management: Managing America's Defense Nuclear Waste" (and appendices) December 2007

website:

http://www.napawash.org/pc_management_studies/doe/doeenvironmentalmanagementdec2007.pdf

6. Status Report on EM's implementation of the NAPA recommendations

- First page is a summary table that shows we have implemented 60 of the 66 recommendations
- The second item is a package that lists all recommendations and the status of EM's response. Note that on two recommendations: A/PM-2 and A/PM-17, EM is awaiting actions by DOE's Procurement Office in order to issue how EM will implement certain procurement processes. So in effect, there are only 4 recommendations left to be implemented that are under EM's sole control.

We are reviewing the papers in the following areas and will provide them to you by next Wednesday December 3rd:

- A. Footprint Reduction/Energy Parks
- B. Low Level Waste Disposal Strategies
- C. Improvements in DOE's Waste Management Approaches

If you have any questions on the attached information or require any other information, please call me at 202-586-5125 or 240-252-0342.



Jim Fiore

E
M Environmental Management

safety ♦ performance ♦ cleanup ♦ closure

Public Law 108-375**108th Congress****An Act**

To authorize appropriations for fiscal year 2005 for military activities of the Department of Defense, for military construction, and for defense activities of the Department of Energy, to prescribe personnel strengths for such fiscal year for the Armed Forces, and for other purposes.

Oct. 28, 2004
[H.R. 4200]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005”.

Ronald W.
Reagan National
Defense
Authorization
Act for Fiscal
Year 2005.

SEC. 2. ORGANIZATION OF ACT INTO DIVISIONS; TABLE OF CONTENTS.

(a) DIVISIONS.—This Act is organized into three divisions as follows:

- (1) Division A—Department of Defense Authorizations.
- (2) Division B—Military Construction Authorizations.
- (3) Division C—Department of Energy National Security Authorizations and Other Authorizations.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

- Sec. 1. Short title.
- Sec. 2. Organization of Act into divisions; table of contents.
- Sec. 3. Congressional defense committees defined.

DIVISION A—DEPARTMENT OF DEFENSE AUTHORIZATIONS**TITLE I—PROCUREMENT****Subtitle A—Authorization of Appropriations**

- Sec. 101. Army.
- Sec. 102. Navy and Marine Corps.
- Sec. 103. Air Force.
- Sec. 104. Defense-wide activities.

Subtitle B—Army Programs

- Sec. 111. Multiyear procurement authority for the light weight 155-millimeter howitzer program.
- Sec. 112. Light utility helicopter program.

Subtitle C—Navy Programs

- Sec. 121. DDG-51 modernization program.
- Sec. 122. Repeal of authority for pilot program for flexible funding of cruiser conversions and overhauls.
- Sec. 123. LHA(R) amphibious assault ship program.

Subtitle D—Air Force Programs

- Sec. 131. Prohibition of retirement of KC-135E aircraft.

“(2) The milestones for the National Ignition Facility to achieve ignition are such milestones (other than the milestones referred to in paragraph (1)) as the Administrator shall establish on any activities at the National Ignition Facility that are required to enable the National Ignition Facility to achieve ignition and be a fully functioning user facility by December 31, 2011.”.

(d) SUBMITTAL TO CONGRESS OF MILESTONES TO ACHIEVE IGNITION.—Not later than January 31, 2005, the Administrator for Nuclear Security shall submit to the congressional defense committees a report setting forth the milestones of the National Ignition Facility to achieve ignition as established by the Administration under subsection (c)(2) of section 3137 of the National Defense Authorization Act for Fiscal Year 2002, as amended by subsection (c) of this section. The report shall include—

- (1) a description of each milestone established; and
- (2) a proposal for the funding to be required to meet each such milestone.

(e) EXTENSION OF SUNSET.—Subsection (d) of section 3137 of such Act is amended by striking “September 30, 2004” and inserting “December 31, 2011”.

SEC. 3115. MODIFICATION OF SUBMITTAL DATE OF ANNUAL PLAN FOR STEWARDSHIP, MANAGEMENT, AND CERTIFICATION OF WARHEADS IN THE NUCLEAR WEAPONS STOCKPILE.

Section 4203(c) of the Atomic Energy Defense Act (50 U.S.C. 2523(c)) is amended by striking “March 15 of each year thereafter” and inserting “May 1 of each year thereafter”.

50 USC 2601
note.

SEC. 3116. DEFENSE SITE ACCELERATION COMPLETION.

(a) IN GENERAL.—Notwithstanding the provisions of the Nuclear Waste Policy Act of 1982, the requirements of section 202 of the Energy Reorganization Act of 1974, and other laws that define classes of radioactive waste, with respect to material stored at a Department of Energy site at which activities are regulated by a covered State pursuant to approved closure plans or permits issued by the State, the term “high-level radioactive waste” does not include radioactive waste resulting from the reprocessing of spent nuclear fuel that the Secretary of Energy (in this section referred to as the “Secretary”), in consultation with the Nuclear Regulatory Commission (in this section referred to as the “Commission”), determines—

- (1) does not require permanent isolation in a deep geologic repository for spent fuel or high-level radioactive waste;
- (2) has had highly radioactive radionuclides removed to the maximum extent practical; and

(3)(A) does not exceed concentration limits for Class C low-level waste as set out in section 61.55 of title 10, Code of Federal Regulations, and will be disposed of—

(i) in compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations; and

(ii) pursuant to a State-approved closure plan or State-issued permit, authority for the approval or issuance of which is conferred on the State outside of this section; or

(B) exceeds concentration limits for Class C low-level waste as set out in section 61.55 of title 10, Code of Federal Regulations, but will be disposed of—

(i) in compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations;

(ii) pursuant to a State-approved closure plan or State-issued permit, authority for the approval or issuance of which is conferred on the State outside of this section; and

(iii) pursuant to plans developed by the Secretary in consultation with the Commission.

(b) MONITORING BY NUCLEAR REGULATORY COMMISSION.—(1) The Commission shall, in coordination with the covered State, monitor disposal actions taken by the Department of Energy pursuant to subparagraphs (A) and (B) of subsection (a)(3) for the purpose of assessing compliance with the performance objectives set out in subpart C of part 61 of title 10, Code of Federal Regulations.

(2) If the Commission considers any disposal actions taken by the Department of Energy pursuant to those subparagraphs to be not in compliance with those performance objectives, the Commission shall, as soon as practicable after discovery of the noncompliant conditions, inform the Department of Energy, the covered State, and the following congressional committees:

(A) The Committee on Armed Services, the Committee on Energy and Commerce, and the Committee on Appropriations of the House of Representatives.

(B) The Committee on Armed Services, the Committee on Energy and Natural Resources, the Committee on Environment and Public Works, and the Committee on Appropriations of the Senate.

(3) For fiscal year 2005, the Secretary shall, from amounts available for defense site acceleration completion, reimburse the Commission for all expenses, including salaries, that the Commission incurs as a result of performance under subsection (a) and this subsection for fiscal year 2005. The Department of Energy and the Commission may enter into an interagency agreement that specifies the method of reimbursement. Amounts received by the Commission for performance under subsection (a) and this subsection may be retained and used for salaries and expenses associated with those activities, notwithstanding section 3302 of title 31, United States Code, and shall remain available until expended.

(4) For fiscal years after 2005, the Commission shall include in the budget justification materials submitted to Congress in support of the Commission budget for that fiscal year (as submitted with the budget of the President under section 1105(a) of title 31, United States Code) the amounts required, not offset by revenues, for performance under subsection (a) and this subsection.

(c) INAPPLICABILITY TO CERTAIN MATERIALS.—Subsection (a) shall not apply to any material otherwise covered by that subsection that is transported from the covered State.

(d) COVERED STATES.—For purposes of this section, the following States are covered States:

(1) The State of South Carolina.

(2) The State of Idaho.

(e) CONSTRUCTION.—(1) Nothing in this section shall impair, alter, or modify the full implementation of any Federal Facility Agreement and Consent Order or other applicable consent decree for a Department of Energy site.

(2) Nothing in this section establishes any precedent or is binding on the State of Washington, the State of Oregon, or any other State not covered by subsection (d) for the management, storage, treatment, and disposition of radioactive and hazardous materials.

(3) Nothing in this section amends the definition of “transuranic waste” or regulations for repository disposal of transuranic waste pursuant to the Waste Isolation Pilot Plant Land Withdrawal Act or part 191 of title 40, Code of Federal Regulations.

(4) Nothing in this section shall be construed to affect in any way the obligations of the Department of Energy to comply with section 4306A of the Atomic Energy Defense Act (50 U.S.C. 2567).

(5) Nothing in this section amends the West Valley Demonstration Act (42 U.S.C. 2121a note).

(f) JUDICIAL REVIEW.—Judicial review shall be available in accordance with chapter 7 of title 5, United States Code, for the following:

(1) Any determination made by the Secretary or any other agency action taken by the Secretary pursuant to this section.

(2) Any failure of the Commission to carry out its responsibilities under subsection (b).

SEC. 3117. TREATMENT OF WASTE MATERIAL.

Of the amounts made available pursuant to the authorization of appropriations in section 3102(1) for environmental management for defense site acceleration completion for the High-Level Waste Proposal, \$350,000,000 shall be available at specified sites for any defense site acceleration completion activities at those sites, as follows:

(1) The Idaho National Engineering and Environmental Laboratory, Idaho, \$97,300,000.

(2) The Savannah River Site, Aiken, South Carolina, \$188,600,000.

(3) The Hanford Site, Richland, Washington, \$64,100,000.

SEC. 3118. LOCAL STAKEHOLDER ORGANIZATIONS FOR 2006 CLOSURE SITES.

(a) ESTABLISHMENT.—(1) The Secretary of Energy shall establish for each Department of Energy 2006 closure site a local stakeholder organization having the responsibilities set forth in subsection (c).

(2) The local stakeholder organization shall be established in consultation with interested elected officials of local governments in the vicinity of the closure site concerned.

(b) COMPOSITION.—A local stakeholder organization for a Department of Energy 2006 closure site under subsection (a) shall be composed of such elected officials of local governments in the vicinity of the closure site concerned as the Secretary considers appropriate to carry out the responsibilities set forth in subsection (c) who agree to serve on the organization, or the designees of such officials.

(c) RESPONSIBILITIES.—A local stakeholder organization for a Department of Energy 2006 closure site under subsection (a) shall—

U.S. Department of Energy

Washington, D.C.

ORDER

DOE O 435.1

Approved: 7-9-99

Review: 7-9-01

Change 1: 8-28-01

Certified: 1-9-07

SUBJECT: RADIOACTIVE WASTE MANAGEMENT

1. **OBJECTIVE.** The objective of this Order is to ensure that all Department of Energy (DOE) radioactive waste is managed in a manner that is protective of worker and public health and safety, and the environment.
2. **CANCELLATION.** This Order cancels DOE 5820.2A, RADIOACTIVE WASTE MANAGEMENT, dated 9-26-88. Cancellation of that Order does not, by itself, modify or otherwise affect any contractual obligation to comply with the Order. The provisions of this canceled Order which have been incorporated by reference in a contract shall remain in effect until the contract is modified.
3. **APPLICABILITY.**
 - a. **DOE Elements.** This Order applies to all DOE elements including the National Nuclear Security Administration (NNSA), except as stated in item "d."
 - b. **Radioactive Waste.** Except as stated in item "d," this Order applies to the management of:
 - (1) All high-level waste, transuranic waste, and low-level waste, including the radioactive component of mixed waste, for which DOE is responsible;
 - (2) DOE accelerator-produced radioactive waste; and
 - (3) If managed at DOE low-level waste facilities, byproduct materials as defined by section 11e.(2) of the *Atomic Energy Act of 1954*, as amended, or naturally occurring radioactive materials.
 - c. **Contractors.** The Contractor Requirements Document, Attachment 1, sets forth requirements to be applied to contractors performing work that involves management of DOE radioactive waste at DOE-owned or leased facilities. Contractor compliance with the Contractor Requirements Document will be required to the extent set forth in a contract.
 - d. **Exemptions.** This Order does not apply to certain DOE programs, facilities, or activities as described below.
 - (1) This Order does not apply to activities conducted under the authority of the Director, Naval Nuclear Propulsion Program, as described in

Vertical line denotes change.

Distribution:
All Departmental Elements

Initiated By:
Office of Environmental Management

Department of Energy *National Security and Military Applications of Nuclear Energy Authorization Act of 1985*, Public Law 98-525.

- (2) Requirements in this Order that overlap or duplicate requirements of the Nuclear Regulatory Commission (NRC) related to radiation protection, nuclear safety (including quality assurance), and safeguards and security of nuclear material, do not apply to the design, construction, operation, and decommissioning of Office of Civilian Radioactive Waste Management facilities as defined in DOE O 250.1, *Civilian Radioactive Waste Management Facilities Exemptions from Departmental Orders*.
- (3) Requirements in this Order that duplicate or conflict with requirements of NRC or an Agreement State do not apply to facilities and activities licensed by the NRC or an Agreement State.
- (4) Requirements in this Order that duplicate or conflict with the *Waste Isolation Pilot Plant Land Withdrawal Act of 1992*, as amended, Public Law 102-579, including the U.S. EPA's Possessive Certification of the WIPP pursuant to this Act, do not apply to the operation of the Waste Isolation Pilot Plant or the disposal of waste therein.
- (5) Unless managed in a low-level waste facility, requirements in this Order do not apply to byproduct material as defined in section 11e.(2) of the *Atomic Energy Act of 1954*, as amended, or naturally occurring radioactive material.
- (6) This Order does not apply to either spent nuclear fuel or non-waste materials.
- (7) Upon request or on its own initiative, DOE may grant exemptions from the requirements of this Order in accordance with the process provided by DOE M 251.1-1A, *Directives System Manual*, as applicable.

4. **REQUIREMENTS.**

- a. DOE radioactive waste management activities shall be systematically planned, documented, executed, and evaluated.
- b. Radioactive waste shall be managed to:
 - (1) Protect the public from exposure to radiation from radioactive materials. Requirements for public radiation protection are in DOE 5400.5, *Radiation Protection of the Public and the Environment*.
 - (2) Protect the environment. Requirements for environmental protection are in DOE 5400.1, *General Environmental Protection Program*, and DOE 5400.5, *Radiation Protection of the Public and the Environment*.

- (3) Protect workers. Requirements for radiation protection of workers are in 10 CFR Part 835, *Occupational Radiation Protection*; requirements for industrial safety are in DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*.
 - (4) Comply with applicable Federal, State, and local laws and regulations. These activities shall also comply with applicable Executive Orders and other DOE directives.
- c. All radioactive waste shall be managed in accordance with the requirements in DOE M 435.1-1, *Radioactive Waste Management Manual*.
 - d. DOE, within its authority, may impose such requirements, in addition to those established in this Order, as it deems appropriate and necessary to protect the public, workers, and the environment, or to minimize threats to property.
5. **RESPONSIBILITIES.** All DOE elements as specified in 3.a are responsible for implementing the requirements of this Order. See DOE M 435.1-1, *Radioactive Waste Management Manual*, for specific responsibilities.
6. **REFERENCES.** DOE M 435.1-1, *Radioactive Waste Management Manual* of 7-09-99 and DOE G 435.1-1, *Implementation Guide for DOE M 435.1-1*.
7. **CONTACT.** Questions concerning this Order should be addressed to the Office of Waste Management at (202) 586-0370.

BY ORDER OF THE SECRETARY OF ENERGY:



THOMAS T. TAMURA
Acting Director of
Management and Administration

CONTRACTOR REQUIREMENTS DOCUMENT

1. In the performance of this contract, the contractor is required to:
 - A. Systematically plan, document, execute, and evaluate the management of DOE radioactive waste and assist the government in planning, executing and evaluating the management of DOE radioactive waste in accordance with the requirements of DOE O 435.1, *Radioactive Waste Management*.
 - B. Assist the government in managing DOE radioactive waste so as to:
 - (1) Protect the public from exposure to radiation from radioactive materials.
 - (2) Protect the environment.
 - (3) Protect workers including following requirements for radiation protection.
 - C. Assist DOE in meeting its obligations and responsibilities under Executive Order 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, and Executive Order 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, and The Pollution Prevention Act of 1990*.
 - D. Comply with the requirements in DOE M 435.1-1, *Radioactive Waste Management Manual*, unless such activities are specifically exempted by DOE O 435.1, Section 3.d., as described below.
 - (1) Activities conducted under the authority of the Director, Naval Nuclear Propulsion Program, as described in Department of Energy *National Security and Military Applications of Nuclear Energy Authorization Act of 1985*, Public Law 98-525.
 - (2) Requirements that overlap or duplicate requirements of the Nuclear Regulatory Commission (NRC) related to radiation protection, nuclear safety (including quality assurance), and safeguards and security of nuclear material, do not apply to the design, construction, operation, and decommissioning of Office of Civilian Radioactive Waste Management facilities as defined in DOE O 250.1, *Civilian Radioactive Waste Management Facilities Exemptions from Departmental Orders*.
 - (3) Requirements that duplicate or conflict with requirements of NRC or an Agreement State do not apply to facilities and activities licensed by the NRC or an Agreement State.
 - (4) Requirements that duplicate or conflict with the *Waste Isolation Pilot Plant Land Withdrawal Act of 1992*, as amended, Public Law 102-579, do not apply to the operation of the Waste Isolation Pilot Plant or the disposal of waste therein.

- (5) Unless managed in a low-level waste facility, requirements in DOE O 435.1 do not apply to byproduct material as defined in section 11e.(2) of the *Atomic Energy Act of 1954*, as amended, or naturally occurring radioactive material.
 - (6) Spent nuclear fuel or non-waste materials.
 - (7) Upon request or on its own initiative, DOE may grant exemptions from the requirements of DOE O 435.1 in accordance with the process provided by DOE M 251.1-1A, *Directives System Manual*.
- E. Incorporate these requirements into the contracts of all sub-contractors which are involved in the management of DOE radioactive waste.

**U.S. Department of Energy
Washington, D.C.**

PAGE CHANGE

DOE O 435.1 Chg 1

8-28-01

SUBJECT: RADIOACTIVE WASTE MANAGEMENT

1. **PURPOSE.** To transmit revised pages to DOE O 435.1 RADIOACTIVE WASTE MANAGEMENT, of 7-09-99.
2. **EXPLANATION OF CHANGE.** This change reflects the establishment of the National Nuclear Security Administration, as directed by the Secretary in his February 29, 2000, memorandum entitled *Establishment of the National Nuclear Security Administration*.
3. **FILING INSTRUCTIONS.**

a.	Remove Page	Dated	Insert Page	Dated
	1	07/09/99	1	08/28/01
	2	07/09/99	2	07/09/99

- b.** After filing the attached page, this transmittal may be discarded.

BY ORDER OF THE SECRETARY OF ENERGY:



Francis S. Blake
Deputy Secretary

***Current Status of Office of Environmental Management
National Academy of Public Administration Recommendations***

	<i>A/PM</i>	<i>OM</i>	<i>HC</i>	<i>TOTAL</i>
<i>Total Number</i>	30	19	20	69
<i>Chose Not to Implement</i>	0	2	1	3
<i>Number to Be Implemented</i>	30	17	19	66
<i>Closed</i>	24	17	19	60
<i>To Be Closed by 12/31/08</i>	5	0	0	5
<i>To Be Closed After 12/31/08</i>	1	0	0	1

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec OM-1: Plan to Implement the Reorganization; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM develop a plan that identifies the actions needed to fully implement the reorganization, including the completion of the functional analysis of its operations; the creation of standard operating procedures (SOPs) and program plans; and a review of delegations of authority. The plan should include timeframes to complete all actions and identify individuals responsible for each action item. (10/11/07) EM actions to date have been very useful; Academy now recommends moving to a next stage and develop a formal action planning mechanism.	CLOSED
NAPA - Rec OM-2: Management Office; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that the Assistant Secretary establish an office reporting to him that is responsible for management analysis activities and other management functions such as policy issuance.	CLOSED
NAPA - Rec OM-3: Chief Business Officer; First Interim Observation Paper, September 2006 (ITEM CLOSED OUT): The Panel recommends that the Assistant Secretary use one of EM's senior executive service slots to create a Chief Business Officer (CBO) position, filled with a term appointment, to lead and oversee EM's mission support of DAS offices. Once EM has fully implemented the reorganization, including completing a functional analysis of all offices, developing standard operating procedures, and delegating authorities down through the organization, the Assistant Secretary should determine whether to retain the position as a term appointment, make it permanent, or abolish it. The Panel further recommends that if the Assistant Secretary creates this position, that the management analysis office recommended above report to the Chief Business Officer.	CHOSE NOT TO IMPLEMENT
NAPA - Rec OM-4: Consolidated Business Center; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that the Assistant Secretary announce immediately his intention to create a long-term vision for the EM Consolidated Business Center (EM CBC) and that the EM CBC report to the CBO. The Panel further recommends that the Assistant Secretary launch a collaborative effort involving staff from the EM CBC and other affected headquarters and field offices to determine how mission support services should be provided throughout the complex. Once EM senior leadership decides how best to provide mission support services, the Assistant Secretary should designate a responsible officer to develop an action plan to achieve that vision and oversee its implementation.	CLOSED
NAPA - Rec OM-5: Transfer of Regulatory Compliance, as well as Engineering and Technology, to the COO; Second Interim Observation Paper, January 2007 (ITEM CLOSED OUT): The Panel recommends that the Assistant Secretary realign the offices of Regulatory Compliance and Engineering and Technology to report to the Chief Operating Officer.	CHOSE NOT TO IMPLEMENT
NAPA - Rec OM-6: Roles of the PDAS and the COO; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the Assistant Secretary, working with the Principal Deputy Assistant Secretary (PDAS) and Chief Operating Officer (COO), define the roles and responsibilities for his top leadership team and take the appropriate steps to ensure that his expectations are being met.	CLOSED
NAPA - Rec OM-7: Field Request Tracking System; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the COO develop a tracking system that enables her office to manage requests for information/action made to field sites.	CLOSED
NAPA - Rec OM-8: Revival of Efforts to Define Roles of PDAS and COO; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the Assistant Secretary revive his efforts to define the roles and responsibilities of the PDAS and COO in accordance with his vision of how the organization should operate, establish clear expectations for their performance, and hold them accountable for meeting those expectations.	CLOSED
NAPA - Rec OM-9: R2A2 Working Group; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the Assistant Secretary ensure that the work of the Roles, Responsibilities, Authorities, and Accountabilities Working Group is consistent with his organizational model of how EM should function within the existing structure.	CLOSED

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec OM-10: Analysis of COO's Office; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the COO, in consultation with the Assistant Secretary and PDAS, define the work the COO's office must perform; determine the staff capacity needed to perform that work; assess the capabilities of the current COO staff to perform the work; and address any skill gaps through training and developing existing staff or adding additional resources to the office. The type and duration of the COO's staff field experience should depend on each staff member's job responsibilities. This analysis also should include a review of staff location and assignments versus efficiency.	CLOSED
NAPA - Rec OM-11: Role Definition for the Office of Project Recovery; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM clearly define the Office of Project Recovery's roles and responsibilities vis-à-vis site management; develop standard operating procedures for how that office works with site management; and develop criteria for when that office is brought in to assist a project and when its assistance is no longer required.	CLOSED
NAPA - Rec OM-12: Realignment of the Office of Project Recovery; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM realign the Office of Project Recovery under the COO to better utilize those resources for all of EM's troubled projects.	CLOSED
NAPA - Rec OM-13: Consolidation of Two Hanford Offices; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): EM should develop a plan to consolidate the soils and groundwater activities at the Hanford site. It also should examine the organizational alignment of its subject matter experts (facility representatives, safety, quality assurance, etc.) at the site to determine whether centralizing those functions into a single office serving both site offices would provide more efficient and effective services. Finally, EM should begin to develop a long-range plan to combine the operations of the two Hanford site offices.	CLOSED
NAPA - Rec OM-14: HQ Interaction with Hanford Site Offices; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the COO work with the Hanford site offices' leadership to gain a full understanding of headquarters interactions with those offices and the impact headquarters' requests/ requirements are having on the site offices' ability to manage their work, and to develop a proposal to address the issues identified.	CLOSED
NAPA - Rec OM- 15: Analysis on information Technology and Cyber security; Final Report, December 2007, Chapter 2, page 10 (ITEM COMPLETED): The Panel recommends that a task of EM's new Management Analysis and Process Management Office should be an analysis of the organizational options for EM's information technology and cyber security options.	CLOSED
NAPA - Rec OM- 16: Assessment of performance Other than Performance reviews Final Report December 2007, Chapter 2, page 15 (ITEM COMPLETED): The Panel recommends that the AS actively work with the newly designated PDAS and the COO to define roles ad responsibilities and to devise a means other than the annual performance review to periodically assess how they are carrying them out.	CLOSED
NAPA - Rec OM- 17: Retain R2A2 Working Group; Final Report December 2007, Chapter 2, page 18 (ITEM COMPLETED): The Panel recommends that core members of the Roles, Responsibilities, Authorities, and Accountabilities Working Group retain responsibility for completing their work.	CLOSED
NAPA - Rec OM-18: Expand Office of Public Accountability; Final Report, December 2007, Chapter 2, page 23 (ITEM COMPLETED): The Panel recommends that EM expand the role of the Office of Public and Intergovernmental Accountability to include corporate communications and outreach with the Tribes/Pueblos and community stakeholders; work with the Tribes/Pueblos and community stakeholders to develop standard operating procedures.	CLOSED
NAPA - Rec OM-19: OM-EM Management Initiative; Final Report December 2007, Chapter 2, page 25 (ITEM COMPLETED): The Panel recommends that EM institutionalize a management action planning process that can guide the organization through this and all future management improvement activities.	CLOSED

**NAPA
Recommendations
and Status**

Source / Basis of Recommendation	Status
NAPA - Rec HC-1: Hiring Control Change; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM's hiring controls program be modified to provide EM leadership necessary oversight but delegate authority to headquarters and field managers to hire and manage their workforces within a delegated resource level.	CLOSED
NAPA - Rec HC-2: Internal Advisory Group on the Cadre; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM convene an internal advisory group of managers, project directors, and financial and HC/HR professionals to identify the role and future vision for the cadre and make recommendations on its appropriate size, skills mix, and operating procedures.	CLOSED
NAPA - Rec HC-3: Human Capital Steering Committee; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM convene a Human Capital Steering Committee that includes senior managers from headquarters and the field as well as financial and HC professionals. This Steering Committee should convene periodically throughout the year to monitor and advise the DAS for HC and Business Services on all HC initiatives, assist in implementing and revising the Human Capital Management Plan (HCMP) as needed, and communicate HC strategies and initiatives throughout the complex. The Assistant Secretary or PDAS should actively participate with the Steering Committee to ensure that EM's leadership embraces HC planning and implementation as a managerial responsibility.	CLOSED
NAPA - Rec HC-4: Working with DOE HR Office; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM and DOE headquarters work together to develop and implement an HR strategy that addresses all of EM's current and anticipated personnel needs and HCMP initiatives. They also should continue regular dialogues to resolve all issues related to EM's personnel actions until such time as DOE headquarters develops and implements HR service level standards. The Panel further recommends that EM consider the use of an impartial third party to facilitate this effort.	CLOSED
NAPA - Rec HC-5: HC Planning Office; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM reconsider its plan for expanding/staffing the HC Planning Office and that it: (1) develop a plan that considers alternative means to meet its short-term HC planning needs, such as using contract support, and focuses on efficient delivery of services in terms of numbers/occupational specialties of positions dedicated to the function; and, (2) ensure that staff within this unit have a substantial core of HR/HC competencies. EM is implementing this recommendation through a multi-pronged approach.	CLOSED
NAPA - Rec HC-6: Workload Forecasting System; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM develop a workload forecasting system for the complex so that workforce resource planning can be calibrated to its mission requirements.	CLOSED
NAPA - Rec HC-7: SES Performance Awards; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM conduct an internal validation of its SES performance award and cash award practices to ensure the integrity of the actions taken. The Panel also recommends that EM assess whether the current practices for appraising and awarding executives at non-EM sites are equitable with respect to EM's practices, and coordinate changes with the Office of Science and Nuclear Energy as appropriate. Finally, the Panel recommends that EM review its SES recognition practice in future years to ensure that distributions do not inadvertently penalize recipients based on the location of their employment/reporting relationships	CLOSED
NAPA - Rec HC-8: EM CBC Support of EM Staff at NNSA Sites; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel suggests that EM assess the feasibility of having the EM CBC provide HR servicing to EM staff at NNSA sites.	CLOSED
NAPA - Rec HC-9 (ITEM CLOSED OUT): GS-201 Staff; Third Interim Observation Paper, August 2007: The Panel suggests that EM develop a proposal for DOE HR's consideration that provides a basis for allowing EM to hire staff in the GS-201, Personnel Management series.	CHOSE NOT TO IMPLEMENT

**NAPA
Recommendations
and Status**

Source / Basis of Recommendation	Status
NAPA - Rec HC-10: HR Servicing Metrics; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM develop a strategic vision for EM HR service delivery that establishes EM-wide HR servicing metrics and measures of efficiency, and identifies how the EM site HR offices, the EM CBC HR office, and contract HR service providers should be optimally used to meet ongoing and surge HR workload.	CLOSED
NAPA - Rec HC-11: Headquarters HR Servicing; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that DOE HR and EM bring to closure as soon as possible all issues and questions related to long-term HR servicing for EM HQ so future objectives and work requirements are clear to all parties and staff time does not continue to be consumed on this matter.	CLOSED
NAPA - Rec HC-12: Staff Planning Methodology; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that before EM expands to the rest of the complex the staff planning methodology used in HQ, that it add more rigor to the existing process.	CLOSED
NAPA - Rec. HC-13: Long-Term / Yearly Workload Planning; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that once EM has established a rigorous staff requirements methodology, it should develop long-term staff estimates for its projects as well as staff estimates for the immediate budget year.	CLOSED
NAPA - Rec HC-14: Organization and Position Design Analysis; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM include an organization-wide analysis of its occupational distribution, pay plan utilization, and supervisory ratios as part of its overall workload planning initiative.	CLOSED
NAPA - Rec HC-15: Workforce Environment Assessment; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM conduct its own in-depth assessment to determine the root causes of the EM-wide and site-specific negative employee perceptions identified in the 2006 Federal Human Capital Survey and this study, and develop and implement appropriate strategies to address these issues. These strategies should include action plans and evaluation methodologies to ensure that improvements in the workplace environment are being accomplished throughout the EM complex.	CLOSED
NAPA - Rec HC-16: Leadership Training; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the EM HC staff examine the selection processes now used to ensure that due consideration is given to candidates' possession of supervisory/managerial competencies, and that EM develop a leadership training program similar in scope to its Project Management Training Program as a means to provide its current and future supervisors/managers with needed competencies.	CLOSED
NAPA - Rec HC-17: Guidance for Interns; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM's intern and new staff member orientation programs include information on the challenges EM is overcoming and the impact they have had on the staff, and how the new members of the workforce are part of the solution. Intern supervisors, trainers, mentors, and coaches also should be well prepared to address these issues.	CLOSED
NAPA - Rec HC- 18: EM staffing estimates at the junior, mid, senior, and executive levels; Final Report, December 2007, Chapter 5, page 85 (ITEM COMPLETED): The Panel recommends that EM's Human Capital Planning office and the Human Capital Steering Committee identify specific short and long-term EM staffing estimates at the junior, mid, senior, and executive levels required to achieve current and future mission objectives. It is further recommended that the EM HC office develop recruitment strategies, with the approval of the EM HCSC, to attract and hire highly qualified candidates for these positions.	CLOSED

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec HC- 19: EM needs 200 FTEs; Final Report, December 2007, Chapter 5, page 90 (ITEM COMPLETED): The Panel recommends that while EM develops a work force planning methodology for the future and DOE conducts its work force analysis for the Department, EM be authorized to Hire immediately an additional 200 employees. Given the magnitude of EM's current staffing shortfall and the urgency of its hiring predicament, the Panel also recommends that EM propose to DOE headquarters that the EMCBC conduct this recruitment.	CLOSED
NAPA - Rec HC-20: Improvements in Work Environment and Diversity; Final Report, December 2007 Chapter 5, page 98 (ITEM COMPLETED): The Panel recommends that EM develop evaluation methodologies that will periodically assess the status of its initiatives to improve EM's workforce environment and diversity against stated objectives in order to ensure progress is being made.	CLOSED

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec A/PM-1: Guidance for Appropriate Contract; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM, in consultation with the DOE headquarters Office of Procurement and Assistance Management and the Office of General Counsel, develop detailed guidance for determining the appropriate contract types for EM acquisitions. The guidance should be included in subsequent Executive Leadership Program workshops.	CLOSED
NAPA - Rec A/PM-2: Business Clearance Process; First Interim Observation Paper, September 2006: The Panel recommends that EM work collaboratively with DOE headquarters Office of Procurement and Assistance Management and the Office of General Counsel to do an engineering analysis of the DOE business clearance review process, including flowcharts, to identify the causes for the current delays, and to reengineer the process to incorporate servicing metrics and the shared commitment among the offices to produce a more efficient, effective, and timely review of documents generated during the course of an EM Acquisition.	12/31/2008 (awaiting MA action)
NAPA - Rec A/PM-3: Dealing with the Contractor; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM leadership develop guidance for EM staff that clarifies the staff's role in dealing with the contractor. The guidance should distinguish technical direction responsibilities, which may be limited in a performance-based environment, from actions to proactively monitor contractor performance and address detected performance problems and issues. This guidance should be on the agenda of subsequent Executive Leadership Program workshops.	CLOSED
NAPA - Rec A/PM-4: Acquisition Machine; First Interim Observation Paper, September 2006 (ITEM COMPLETED): The Panel recommends that EM revise its plans for the acquisition machine to locate the contract placement function at the EM CBC.	CLOSED
NAPA - Rec A/PM-5: NAVFAC Review; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that, in addition to the review of NASA and NAVAIR models, the DAS for Acquisition and Project Management include an examination of the acquisition planning policies and practices of the Naval Facilities Engineering Command (NAVFAC) as part of an action plan to improve EM's acquisition planning and execution. In addition, the action plan should include a comparison of other agencies' models with EM in terms of workload and the skills, knowledge, and abilities of the respective staffs.	CLOSED
NAPA - Rec A/PM-6: Plan for Assuming HCA; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the DAS for Acquisition and Project Management develop and execute an implementation plan for assuming EM Head of Contracting Activity (HCA) responsibilities that: (a) allows site managers and their acquisition directors to retain responsibility for the day-to-day management of acquisition functions and the recruitment and career development of their acquisition staffs; (b) gives the DAS for Acquisition and Project Management authority to concur in the performance plans and ratings of the site acquisition director; and, (c) ensures that site requests for issuance of contracting officer warrants are addressed in a prompt and effective manner.	CLOSED
NAPA - Rec A/PM-7: 1102 Staffing; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the Assistant Secretary develop a staffing request for necessary GS 1102 procurement analysts and submit it to DOE headquarters for approval. The request should contain a specific acknowledgement that these positions will not be used to perform operational contract placement or administration work.	CLOSED

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec A/PM-8: Acquisition Oversight; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the DAS for Acquisition and Project Management submit to DOE headquarters a detailed proposal for improving the current acquisition oversight program. The proposal should revise the business clearance process as follows: (a) Sites annually submit their lists of projected acquisitions over \$5 million to the EM HCA and Office of Procurement and Assistance Management; (b) EM acquisition sites approve all actions \$20 million or under; (c) all actions from \$20 million to \$100 million are subject to review by the EM HCA and DOE General Counsel; (d) actions over \$100 million are subject to the existing business clearance process.	CLOSED
NAPA - Rec A/PM-9: Financial Assistance Consolidation; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the DAS for Acquisition and Project Management develop a plan for centralizing the award and administration of all EM financial assistance instruments at the EM CBC.	CLOSED
NAPA - Rec A/PM-10: EM CBC Cost and Price Support; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the DAS for Acquisition and Project Management and the EM CBC director arrange for the EM CBC to provide cost and price analysis support to all EM sites. The EM CBC also should work with sites to help them develop local acquisition guidance and templates.	CLOSED
NAPA - Rec A/PM-11: PBA Initiative; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that the DAS for Acquisition and Project Management develop and implement a Performance-Based Acquisition (PBA) initiative that includes: (a) efforts to promote increased management attention to and awareness of PBA requirements and the benefits of using comprehensive PBA strategies for the EM program; (b) training for EM acquisition and project management staff in PBA requirements and techniques; (c) a mechanism for targeting EM PBA opportunities during the early stages of acquisition planning; (d) delivery of "just-in-time" training in PBA concepts and techniques to integrated project teams prior to their working on PBA solicitations; and, (e) processes for ensuring that PBA contracts conform to regulatory guidance before recording them as a PBA action in the Federal Procurement Data System.	CLOSED
NAPA - Rec A/PM-12: IPABS Modification; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM modify Integrated Planning Activity and Budgeting System (IPABS) to enable it to compare Earned Value Management System (EVMS) cost and performance information with budget data, and that the results of this analysis are included in future QPR reports and other project status documents.	CLOSED
NAPA - Rec A/PM-13: Technology Maturity Levels; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM implement Technology Maturity Levels (TML), and institute a formalized process for assigning ratings to proposed technological solutions.	CLOSED
NAPA - Rec A/PM-14: Internal Cost Estimating Capacity; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM develop an internal cost-estimating capacity in EM headquarters as well as at EM's field sites. EM should expand the work scope of its existing cost-estimating contractors to have them develop training and mentoring programs for EM's workforce.	CLOSED
NAPA - Rec A/PM-15: EVMS Standard Cost Reports; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM require its contractors to produce EVMS' five standard Cost Performance Report (CPR) reporting formats. Further, the Panel recommends that EM develop a mechanism to monitor contractors' EVMS in order to ensure the integrity of the data produced.	CLOSED

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec A/PM-16: Project Management Training; Second Interim Observation Paper, January 2007 (ITEM COMPLETED): The Panel recommends that EM modify its project management training to include an increased focus on the capabilities and limitations of its tracking and reporting systems—EVMS, IPABS, and PARS. EM also should develop a mentoring program where seasoned FPD's work with less-experienced FPD's in the use of these systems. EM should include this mentorship as a standard in FPD's performance appraisals.	CLOSED
NAPA - Rec A/PM-17: Acquisition Processes Review; Third Interim Observation Paper, August 2007: The Panel proposes that the DAS for Acquisition and Project Management review all EM processes for reviewing and approving acquisition transactions at EM headquarters. The review should encompass any transactional review requirements generated by the reengineered business clearance process as well as those generated by the acquisition machine or new HCA authority. The review should focus on streamlining existing or proposed processes and eliminating those requirements that add little value and/or would impose unacceptable delays in processing acquisition actions.	12/31/2008 (awaiting MA action)
NAPA - Rec A/PM-18: Delegation Level Pilot; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel suggests that EM draft a proposal to OPAM to pilot test the review thresholds contained in the Panel's second Observations Paper at a single EM site, such as the EM CBC. The proposal should provide a description of the site's capability and processes for ensuring adequate review of actions below the elevated thresholds. ITEM RELATED TO A/PM-6	CLOSED
NAPA - Rec A/PM-19: Lessons Learned; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the Assistant Secretary prepare and issue a document that summarizes the basic factual circumstances related to the cost growth and schedule slippage on the Waste Treatment Plant project and identifies the lessons that could be applied to other EM acquisition situations.	CLOSED
NAPA - Rec A/PM-20: Project Management Standardization; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM standardize and integrate project performance management tools across the complex, particularly those that supplement or are integrated with the Earned Value Management System. EM should conduct a complex-wide assessment to ascertain what tools FPD's are now using to manage project performance on a day-to-day basis. The results of this assessment should form the basis for developing a standardized project management "toolbox."	CLOSED
NAPA - Rec A/PM-21: Color Assessment Scheme; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that EM examine its procedures for responding to, and holding field personnel accountable for, the color assessments of projects. These procedures should address, but need not be limited to, concrete definitions for the "meaning" of each assessment color.	CLOSED
NAPA - Rec A/PM-22: Project Specific Success Metrics; Third Interim Observation Paper, August 2007(ITEM COMPLETED): The Panel proposes that the DAS for Acquisition and Project Management work with each field office to produce project-specific success metrics. These metrics should take into account the type of work being performed and the specific facilities involved and technologies deployed, and should ideally be devised in collaboration with relevant contractors. These metrics should be reported on a quarterly basis as part of the EM QPR presentation format.	CLOSED
NAPA - Rec A/PM-23: Further IPABS Modification; Third Interim Observation Paper, August 2007: The Panel proposes that the EM IPABS Steering Committee produce a formal requirements document that defines the functional requirements for replacing or modifying IPABS.	5/31/2009 (for Phase 1 Business Process Review)

NAPA
Recommendations
and Status

Source / Basis of Recommendation	Status
NAPA - Rec A/PM-24: General Assessment of QA; Third Interim Observation Paper, August 2007 (ITEM COMPLETED): The Panel proposes that the DAS for Safety Management and Operations build upon EM's current assessment of QA at construction sites, and perform a general assessment of QA. This assessment should focus on: translating QA guidance into a functional QA regime at the site level in a way that accounts for existing staffing levels and organizational structure; assessing staffing requirements needed to perform QA functions at an optimal level; clearly identifying a well-qualified focal point for QA at EM field sites; and providing the QA focal point with direct lines of access to top managers at the site level.	CLOSED
NAPA - Rec A/PM-25: Unfunded Contingency; Third Interim Observation Paper, August 2007: The Panel proposes that EM undertake a study to determine whether, historically, the funds identified as "unfunded contingency" have been balanced between overruns and surpluses, as well as whether the practice has prompted an excessive need for project time extensions or reprogramming requests to Congress. EM should consider making the results of this study the foundation for a systematic reexamination of whether 50 percent is the appropriate confidence level to fund its operating and cleanup projects.	12/31/2008
NAPA - Rec A/PM-26: EM Specific FPD Standards; Third Interim Observation Paper, August 2007: The Panel proposes that EM undertake a study of the appropriateness of the DOE FPD certification standards to the unique operating and cleanup projects that characterize its project portfolio, and use the results as a basis to tailor a version of those standards specifically for EM FPD's.	12/31/2008
NAPA - Rec A/PM-27 Small Business Activities; Final Report, December 2007, Chapter 3, page 45 (ITEM COMPLETED): The Panel recommends that EM develop appropriate planning templates that provide for full consideration of the issues and concerns related to small business set-asides.	CLOSED
NAPA - Rec A/PM-28 Baseline Changes: Final Report, December 2007, Chapter 3, page 52: The Panel recommends that EM develop written guidance that clearly describes the roles, responsibilities, and processes for executing baseline changes.	12/31/2008
NAPA - Rec A/PM-29: Lessons Learned from Pilots: Final Report, December 2007, Chapter 3, page 53 (ITEM COMPLETED): The Panel recommends that EM take full advantage of the lessons learned from the Moab and West Valley pilots of the Partnership for Public Service's Acquisition Innovation Project.	CLOSED
NAPA - Rec A/PM-30: Project Management Case study: Final Report, December 2007, Chapter 4, page 74 (ITEM COMPLETED): The Panel recommends that EM pilot test a management case study workshop aimed specifically at the federal project directors (FPDs) and, if successful, include the workshop as mandatory training for some or all FPD certification levels. EM should also use lessons learned from the FPDs at the ORP and RL who have already attended the workshop to develop the pilot and help make this determination.	CLOSED

ROOT CAUSE ANALYSIS

CONTRACT AND PROJECT MANAGEMENT

CORRECTIVE ACTION PLAN

JULY 2008



U.S. DEPARTMENT OF
ENERGY

Cover Photo:

The OMEGA EP (Extended Performance) Laser Facility, located at the University of Rochester, was completed in the spring of 2008. This NNSA Stockpile Stewardship Science project houses a four-beam, high-energy, high-intensity, short- and long-pulse laser beam. It was completed at a total project cost of \$98.5 million.



The Secretary of Energy
Washington, D.C. 20585

July 18, 2008

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: SAMUEL W. BODMAN *Samuel W. Bodman*

SUBJECT: Improving Contract and Project Management

Improving the Department of Energy's performance on contract and project management is essential to ensuring that we meet our strategic objectives and provide value to the American taxpayer. This continues to be one of my top management priorities.

As part of our initiative to institutionalize strong contract and project management practices, I directed a team of senior leaders to develop a plan to address long-standing impediments to improving our performance. These impediments were identified in a Root Cause Analysis that I approved on April 7, 2008.

I am pleased to announce that the team has completed the Contract and Project Management Corrective Action Plan (CAP), which provides the roadmap to mitigate or eliminate the obstacles that have significantly impeded the Department's ability to complete projects on cost and schedule. I have accepted the CAP and fully endorse its conclusions and recommendations. A copy of the CAP is attached. It can also be viewed electronically at <http://management.energy.gov>.

The CAP was developed through extensive collaboration between DOE's headquarters and field project, contract and financial management professionals and in coordination with the Office of Management and Budget and the Government Accountability Office. It identifies the key corrective measures necessary to make the meaningful changes required to consistently deliver projects within cost and schedule performance parameters. These include, for example: disciplined upfront planning; adequate, skilled Federal contract and project management and oversight staff; realistic cost baselines and associated funding profiles; and improved communication between the project director, project team members and senior management. The CAP also recommends improved performance metrics, annual targets as well as an action plan with milestones.

Today, I am officially establishing the CAP Executive Steering Committee (ESC) and I approve its charter. The Chairperson of this committee is Ms. Ingrid Kolb, Director, Office of Management. The Committee members include representatives from the Under Secretaries' Offices, the Office of Management and the Office of the Chief Financial Officer.



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Implementation of the Corrective Action Plan with oversight by the ESC will ensure that DOE's efforts to improve contract and project management are focused on addressing the root causes with meaningful and lasting solutions and provide demonstrable results.

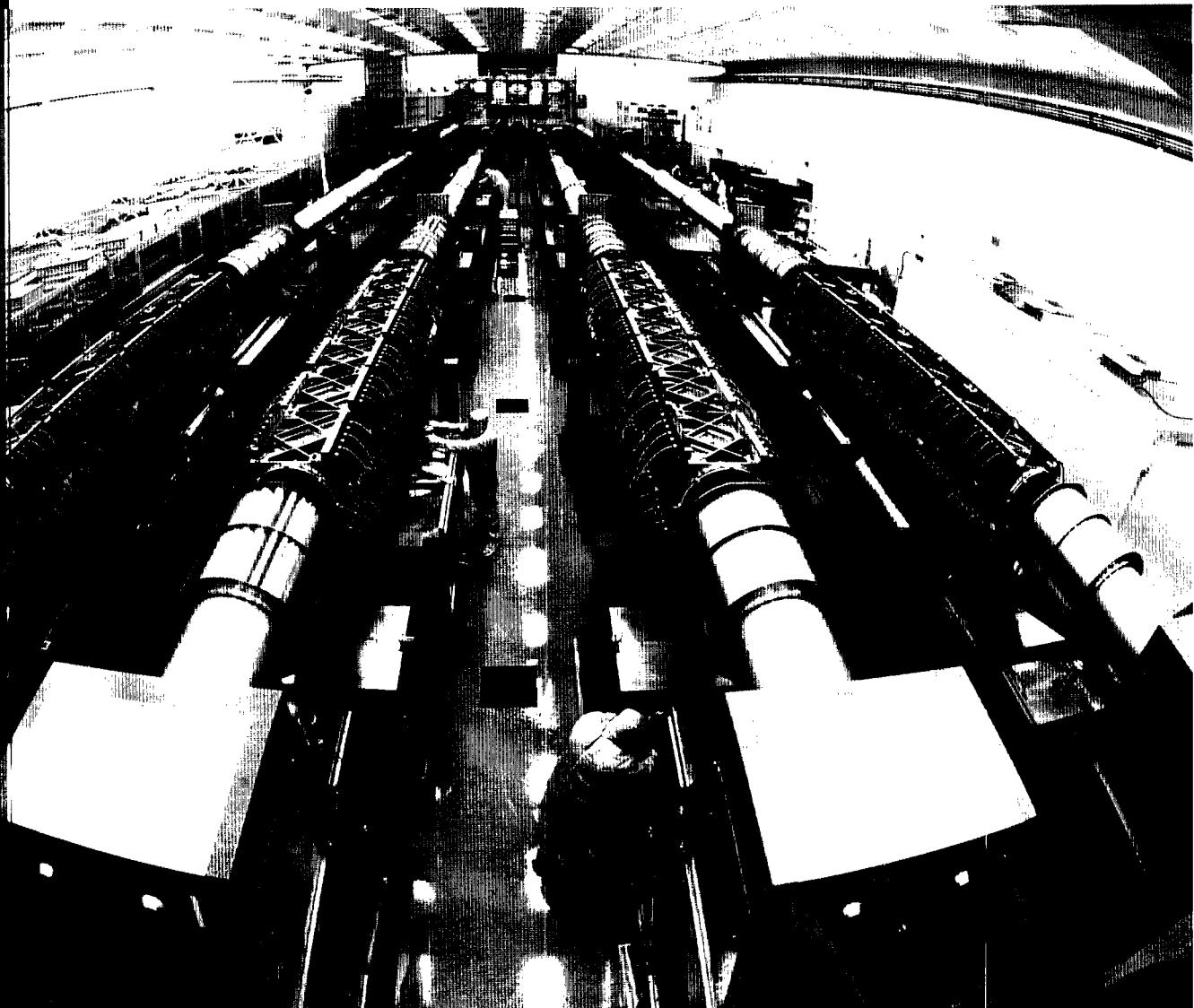
I remain strongly committed to tangible improvement in DOE's project and contract performance. My endorsement of the CAP today demonstrates my commitment to pursue those initiatives and actions which, when implemented, will resolve the contract and project management issues and root causes which have challenged DOE for years. I expect that you, as a senior leader of this Department, will fully commit your organization's resources to bring about the needed changes reflected in the CAP. Your personal commitment and the active participation of your headquarters and field organizations are critical to our success.

Attachment

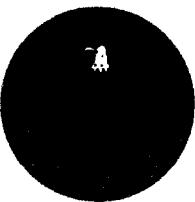
ROOT CAUSE ANALYSIS
CONTRACT AND PROJECT MANAGEMENT

CORRECTIVE ACTION PLAN

JULY 2008



U.S. DEPARTMENT OF
ENERGY



Contract and Project Management: Corrective Action Plan

JULY 2008

Executive Summary

Achieving and maintaining excellence in contract and project management is a top priority for the Department of Energy (DOE). To accomplish this goal, the Department has already implemented a series of significant contract and project management reforms, including the conduct of a root cause analysis (RCA) to identify the major challenges to planning and managing DOE projects.

The RCA pinpoints opportunities for improving the Department's management of contracts and projects and is serving as the foundation for developing and implementing corrective measures to improve performance and, ultimately, being removed from the Government Accountability Office (GAO) High Risk List. The RCA is unique in that it represents the first time that the Department internally identified past and present deficiencies in contract and project management and gained consensus on their root causes. Developed through extensive collaboration between DOE's Headquarters and field project, contract, and financial management professionals, it highlights several areas requiring improvement. These include, for example, front-end planning and requirements definition, risk management, independent government cost estimating, acquisition planning, and overall project oversight.

The issues and underlying root causes identified in the Department's RCA highlight past and present contract and project management challenges. They do not presuppose future solutions. The specific wording of these issues and associated root causes have been codified in the Department of Energy Contract and Project Management Root Cause Analysis published in April 2008.

The focus of this Corrective Action Plan (CAP) is to successfully address the deficiencies identified in the RCA and improve contract and project management performance. To realize improvement, the number and capabilities of federal contract and project management personnel may need to be increased and the management policies, systems, and structures used to manage contracts and projects strengthened. Improved contract and project management performance will require a dedicated effort to first look to reallocate the current use of resources, reduce the reliance on contractors, and increase the federal ownership role for management and oversight of contracts and projects.

The 10 most significant issues identified and the underlying root causes contributing to the contract and project management challenges are listed below.

- ◆ **Front-End Planning:** DOE often does not complete front-end planning to an appropriate level before establishing project performance baselines.
 - Insufficient number of personnel
 - Lack of personnel with the appropriate skills
 - Inadequate time dedicated to front-end planning
 - Reliance on the management and operating (M&O) contractor
 - Lack of defined benchmarks
 - Lack of effective interdepartmental integration
 - Insufficient planning budget resources
- ◆ **Federal Personnel:** DOE does not have an adequate number of federal contracting and project management personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical) to plan, direct, and oversee project execution.
 - Insufficient budget resources
 - Conflicting and competing priorities
 - Inferior Federal government compensation compared to the private sector
 - Inadequate roles and responsibilities definition
 - Inadequate training
- ◆ **Risk Assessment and Management:** Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.
 - Insufficient number of personnel
 - Inadequate training
 - Lack of management emphasis and direction
 - Lack of recognition of required number and skills of personnel needed
- ◆ **Funding:** Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.
 - Ineffective project and program prioritization
 - Inadequate resource allocation
- ◆ **Cost Estimating:** Contracts for projects are too often awarded prior to the development of an adequate independent government cost estimate.
 - Lack of policy or standards
 - Lack of personnel with the appropriate skills
 - Lack of databases with current or historical information

- ◆ **Acquisition Strategy and Planning:** DOE's acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.
 - Lack of personnel with the appropriate skills
 - Competing priorities
 - Personnel resource conflicts and budget limitations
 - Lack of effective field and headquarters integration
 - Lack of lessons learned
 - Inadequate roles and responsibilities definition
- ◆ **Organizational Structure and Alignment:** DOE's organizational structure is not optimized for managing projects.
 - Competing priorities
 - Lack of prioritization on project management
 - Lack of alignment in authority, accountability, and responsibility
 - Attributes of optimized organizational structure are not understood
- ◆ **Requirements Management:** DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.
 - Conflicting guidance and priorities
 - Lack of adequate personnel resources
 - Inadequate training
 - Lack of failed project reviews
- ◆ **Project Oversight:** Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.
 - Inadequate budget and personnel resources
 - Competing and conflicting resource priorities
 - Inadequate field oversight
- ◆ **Project Owner Role:** DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.
 - Inconsistent expectations and definition of federal ownership role
 - Lack of personnel with the appropriate skills
 - Limited authority of Federal Project Directors (FPDs)
 - Lack of accountability

These are the most fundamental issues and associated root causes that must be addressed to bring about significant and lasting solutions to the Department's contract and project management challenges. Accordingly, the Department's CAP is being established to mitigate and eliminate these issues and their associated root causes. Included in the CAP are performance goals that the

Department has identified for capital line item and environmental management (EM) cleanup projects. These goals constitute the definition of success for project management. They represent interim goals and will be revisited in two years with a focus towards continuous improvement as the Department strives to ensure attainment of the Federal Acquisition Streamlining Act V integrated cost, schedule, and performance goals. The Department's goals include:

- ◆ Capital Asset Line Item Projects: Capital asset line item projects will be completed at Critical Decision 4 within the original approved scope baseline and within 10 percent of the original approved cost baseline (Critical Decision 2), unless otherwise impacted by a directed change.¹ Baselines impacted by a directed change will have adjusted baselines established. On a project portfolio basis, 90 percent of DOE line item projects will meet the project success definition benchmark.
- ◆ EM Cleanup (Soil and Groundwater Remediation, Decontamination and Decommissioning, and Waste Treatment and Disposal) Projects: EM cleanup projects will be completed by achieving at least 80 percent of the defined near-term baseline end-state scope (Critical Decision 2) with less than a 25 percent cost variance from the original approved baseline, unless impacted by a directed change. On a project portfolio basis, 90 percent of EM cleanup projects will meet the project success definition benchmark.

These are the benchmarks that will be used to define, track, and measure project performance over time. The difference in performance benchmarks reflects the inherent differences in the planning and execution of capital asset construction projects and EM cleanup projects. It is often more difficult to clearly define up-front requirements for EM cleanup projects (e.g., Soil and Groundwater Remediation) and, in most cases they operate in different regulatory and funding environments with different stakeholder pressures. The objective is to align both performance goals. The EM cleanup project performance goal will be revisited within the next two years and revised as appropriate.

While each project has individual schedule goals, the primary focus of these Departmental overarching performance goals is to maintain cost discipline by recognizing that any significant schedule delay translates to project cost increases. Project schedules will continue to be monitored; however, in the near term, minimizing project cost growth will be the Department's primary focus with the understanding that there is a strong correlation between schedule and cost. In order to maintain a Departmental focus on adherence to schedules, a project schedule performance metric has been established and is included as part of Corrective Measure 7. This metric is included in Chapter 2 and Appendix B of the CAP. The Department will strive to improve the project schedule performance metric realizing that more often than not, the Department's construction schedules are driven more by funding profiles than by construction scheduling best practices. It will be revisited within the next two years and revised as appropriate.

¹ Directed Change: Changes, as validated by OECM, caused by DOE Policy Directive, Regulatory, or Statutory action. Directed changes, with the exception of policy directives, are changes that are caused by entities external to the Department, to include external funding reductions. (Directed change decisions will be reviewed and validated by OMB periodically.)

In addition, maintaining the original capital asset line item scope baseline by achieving the minimum key performance parameters and mission need is paramount. In some instances, scope reductions in facility requirements may be necessary to maintain scope, schedule, and cost balance; however, minimum key performance parameters will not be compromised. Capital asset mission achievement will not be sacrificed. This is consistent with construction industry practice and the protocol of the federal government's largest design and construction agents—the U.S. Army Corps of Engineers and the Naval Facilities Engineering Command.

This contract and project management CAP establishes eight corrective measures that, when completed, will result in significant, measurable, and sustainable improvements in the Department's contract and project management performance and culture. These corrective actions, in priority order, include:

- ◆ **Strengthen Front-End Planning:** Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.
- ◆ **Improve Staffing Levels:** Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce.
- ◆ **Strengthen Risk Management:** Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.
- ◆ **Improve Funding and Baseline Alignment:** Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.
- ◆ **Improve Cost Estimating Capability:** Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.
- ◆ **Strengthen Federal Ownership:** Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans, and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.
- ◆ **Improve Oversight:** Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

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- ◆ **Strengthen Requirements Management:** Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.

Each of the corrective measures addresses a critical issue the Department has identified that impedes contract and project management performance. Chapter 1, Introduction, of this CAP aligns each specific issue and underlying root causes with each corrective measure. With successful CAP implementation, these root causes will be mitigated and/or eliminated, and contract and project management significantly improved.

The Department's RCA and associated CAP were formulated as part of a continuous improvement effort to strengthen the Department's contract and project management performance. The documented issues and root causes identify the project and program management weaknesses that must be addressed by the Department to strengthen its role as an owner and more effectively fulfill its contract and project management responsibilities. The measures committed to in this CAP were developed to address and resolve the issues and root causes of the documented contract and project management weaknesses and to prevent their recurrence.

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Chapter 1

Introduction

The Department's contract and project management RCA identified the significant issues negatively impacting contract and project management performance as well as their associated underlying root causes. In order for the Department to improve its contract and project management performance, it is imperative to mitigate and, where applicable, eliminate the root causes associated with these issues. Accordingly, the Department has identified eight corrective measures that are being developed and defined to directly address each issue and its root causes. These corrective measures are summarized below and described in further detail in Chapter 2 of this CAP.

U.S. Department of Energy Corrective Measures Aligned to Address the Most Significant Contract and Project Management Issues and the Associated Underlying Root Causes	
Most Significant Contract and Project Management Issues and Underlying Root Causes	Contract and Project Management Corrective Measures
ISSUE – DOE often does not complete front-end planning to an appropriate level before establishing project performance baselines. <ul style="list-style-type: none">▪ Insufficient number of personnel▪ Lack of personnel with the appropriate skills▪ Inadequate time dedicated to front-end planning▪ Reliance on the M&O contractor▪ Lack of defined benchmarks▪ Lack of effective interdepartmental integration▪ Insufficient planning budget resources	CORRECTIVE MEASURE #1 – Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.
ISSUE – DOE does not have an adequate number of federal contracting and project management personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical) to plan, direct, and oversee project execution. <ul style="list-style-type: none">▪ Insufficient budget resources▪ Conflicting and competing priorities▪ Inferior federal government compensation compared to the private sector▪ Inadequate roles and responsibilities definition▪ Inadequate training	CORRECTIVE MEASURE #2 – Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce

U.S. Department of Energy Corrective Measures Aligned to Address the Most Significant Contract and Project Management Issues and the Associated Underlying Root Causes

Most Significant Contract and Project Management Issues and Underlying Root Causes	Contract and Project Management Corrective Measures
<p>ISSUE – Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.</p> <ul style="list-style-type: none"> ▪ Insufficient number of personnel ▪ Inadequate training ▪ Lack of management emphasis and direction ▪ Lack of recognition of required number and skills of personnel needed 	<p>CORRECTIVE MEASURE #3 – Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.</p>
<p>ISSUE – Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.</p> <ul style="list-style-type: none"> ▪ Ineffective project and program prioritization ▪ Inadequate resource allocation 	<p>CORRECTIVE MEASURE #4 – Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.</p>
<p>ISSUE – Contracts for projects are too often awarded prior to the development of an adequate independent government cost estimate.</p> <ul style="list-style-type: none"> ▪ Lack of policy or standards ▪ Lack of personnel with the appropriate skills ▪ Lack of databases with current or historical information 	<p>CORRECTIVE MEASURE #5 – Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.</p>
<p>ISSUE – DOE's acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.</p> <ul style="list-style-type: none"> ▪ Lack of personnel with the appropriate skills ▪ Competing priorities ▪ Personnel resource conflicts and budget limitations ▪ Lack of effective field and headquarters integration ▪ Lack of lessons learned ▪ Inadequate roles and responsibilities definition 	<p>CORRECTIVE MEASURE #6 – Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.</p>

U.S. Department of Energy Corrective Measures Aligned to Address the Most Significant Contract and Project Management Issues and the Associated Underlying Root Causes	
Most Significant Contract and Project Management Issues and Underlying Root Causes	Contract and Project Management Corrective Measures
<p>ISSUE – DOE's organizational structure is not optimized for managing projects.</p> <ul style="list-style-type: none"> ▪ Competing priorities ▪ Lack of prioritization on project management ▪ Lack of alignment in authority, accountability, and responsibility ▪ Attributes of optimized organizational structure are not understood <p>ISSUE – Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.</p> <ul style="list-style-type: none"> ▪ Inadequate budget and personnel resources ▪ Competing and conflicting resource priorities ▪ Inadequate field oversight <p>ISSUE – DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.</p> <ul style="list-style-type: none"> ▪ Inconsistent expectations and definition of federal ownership role ▪ Lack of personnel with the appropriate skills ▪ Limited authority of FPDs ▪ Lack of accountability 	<p>CORRECTIVE MEASURE #7 – Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.</p>
<p>ISSUE – DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.</p> <ul style="list-style-type: none"> ▪ Conflicting guidance and priorities ▪ Lack of adequate personnel resources ▪ Inadequate training ▪ Lack of failed project reviews 	<p>CORRECTIVE MEASURE #8 – Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.</p>

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Chapter 2

Corrective Measures

The information contained in this chapter is a summary of each of the eight corrective measures. Each corrective measure contains a summary sheet intended for use as a framework to guide the further development of more detailed plans of action to address the issues and associated root causes and ultimately implement effective corrective actions. The responsibility for conducting a comprehensive review and analysis resides with each of the corrective measure teams under the leadership and direction of the assigned organizational sponsor.

The detailed development and implementation of corrective actions is a dynamic and iterative process. Several options and alternatives are expected to address the deficiencies associated with each corrective measure. These will be considered, evaluated, and implemented, as applicable. In order to maintain an organized process and not presuppose answers or solutions, the responsibility for identifying and analyzing these recommended solutions lies with each corrective measure team. During the process, there is an expectation that additions to corrective measure elements and future actions will be considered and incorporated. The following corrective measure sheets document the starting point. The implementation of proposed corrective measure actions will be coordinated and integrated using an established Executive Steering Committee (discussed in more detail in Chapter 3) and in accordance with the Department's established organizational structure and management systems.

As the starting point, each of the corrective measures summarized in this chapter have been developed and defined to include:

- The Departmental organizational sponsor and supporting organizations responsible and accountable for developing and implementing the corrective measure;
- A broad description of the corrective measure, including a list of some of the activities comprising the measure;
- A listing of some impediments and challenges facing the Department for successful corrective measure implementation;
- A listing of some accomplishments and remaining near-term actions to successfully implement and complete the corrective measure; and
- A description of the desired outcome resulting from implementing the corrective measure, including how successful implementation will be measured.

The overall implementation schedule of these corrective measures is highlighted within Appendix A and addressed within Chapter 3. The schedule sequencing of these corrective measures is, for the most part, based on their relative priority as numbered one through eight. The priorities were established as a result of the RCA through a nominal voting methodology.

In addition, metrics and targets for each corrective measure are included in Appendix B. Each metric and its baseline are clearly defined, as well as the appropriate end date to achieve the objective. The Department's plans of action and milestones for each corrective measure are also reflected in Appendix B. The organizational sponsor is also indicated, by name and title. This is the person accountable to deliver the corrective measure and each of the specific actions outlined within.

<u>CORRECTIVE MEASURE 1</u>	
Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.	
<p><u>Issue:</u> DOE often does not complete front-end planning to an appropriate level before establishing project performance baselines.</p>	<p><u>Root Causes:</u></p> <ul style="list-style-type: none"> ▪ Insufficient number of personnel ▪ Lack of personnel with the appropriate skills ▪ Inadequate time dedicated to front-end planning ▪ Reliance on the M&O contractor ▪ Lack of defined benchmarks ▪ Lack of effective interdepartmental integration ▪ Insufficient planning budget resources
<p><u>Organizational Sponsor:</u> Thad Konopnicki Deputy Associate Administrator Office of Infrastructure and Environment National Nuclear Security Administration</p>	<p><u>Supporting Organizations:</u> Office of Engineering and Construction Management Office of Environmental Management Office of Chief Financial Officer Office of Under Secretary or other Program Office Rep (e.g., RW, EE, NE, FE)</p>
<p><u>Description:</u> The following elements are some of the core components of this corrective measure:</p> <ul style="list-style-type: none"> ▪ Establish a more detailed internal front-end planning process, including planning metrics to ensure preliminary project scope statements are in place prior to CD-1 and detailed project scope definitions are in place prior to CD-2, and limit follow-on scope creep. ▪ Develop a uniform set of front-end planning requirements/criteria/benchmarks including readiness of critical technologies. ▪ Identify and define specific and bounding assumptions for associated technical design and nuclear safety requirements by CD-1. ▪ Identify and allocate the appropriate resources to effectively complete front-end planning. ▪ Perform independent reviews to ensure the appropriate level of planning is complete prior to project approval and additional resource allocation. ▪ Include research, development, demonstration, and implementation of critical technologies in front-end planning basis of projects beginning no later than CD-1, as appropriate. ▪ Develop improved program management requirements/guidance and training that enables better planning, management, execution, budgeting, and oversight of large programs and their projects. ▪ Break large programs/projects into smaller stand-alone projects, as appropriate. ▪ Establish clear federal ownership responsibility for front-end planning. ▪ Ensure that all viable alternatives have been considered and that a thorough life cycle cost analysis has been performed. ▪ Ensure that project requirements are tied to strategic program objectives/plans. 	
<p><u>Impediments/Challenges:</u></p> <ul style="list-style-type: none"> ▪ Competing influences and inconsistent decision making based on the annual budget cycle/schedule ▪ Organizational culture and resistance to change ▪ Over-reliance on the M&O contractors ▪ There is a tendency to discount viable alternatives ▪ Managers have a strong desire to get to the execution stage of a project ▪ Project assumptions and cost and schedule estimates tend to be overly optimistic 	

CORRECTIVE MEASURE 1

Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.

Accomplishments to Date:

- Commenced development of NNSA Project Definition Rating Index (PDRI)
- External Independent Reviews and Independent Project Reviews
- EM Technology Readiness Level (TRL) process and Guide
- Development of the NNSA Program Requirements Document Business and Operating Procedure
- Developed and successfully using an EM PDRI
- EM "Best in Class" initiative; an EM initiative to improve EM contract and project management

Some Remaining Near-Term Actions:

- Develop and implement TRL models, where applicable
- Establish procedures for requirements documentation and hierarchy early in project cycle
- Develop and implement tailored PDRI models
- Develop and conduct PDRI and TRL training
- Develop PDRI and TRL guides, as appropriate
- Enhance change control process

Expected Outcomes/Key Success Measures:

- Outcome: Improved project requirements definition and front-end planning.
- Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals.
- Metric: By the end of FY 2011, 80% of projects (greater than \$100 million) will use PDRI methodologies no later than CD-2.
- Metric: By the end of FY 2011, all projects (greater than \$750 million [i.e., Major System Projects]) applying new technology, as appropriate, will implement technology readiness assessment methodologies no later than CD-2.

<u>CORRECTIVE MEASURE 2</u>	
Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce.	
<u>Issue:</u> DOE does not have an adequate number of federal contracting and project management personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical) to plan, direct, and oversee project execution.	<u>Root Causes:</u> <ul style="list-style-type: none"> ▪ Insufficient budget resources ▪ Conflicting and competing priorities ▪ Inferior federal government compensation compared to the private sector ▪ Inadequate roles and responsibilities definition ▪ Inadequate training
<u>Organizational Sponsor:</u> Pete Check Deputy Director Office of Engineering and Construction Management Office of Management	<u>Supporting Organizations:</u> Office of Environmental Management National Nuclear Security Administration Office of Human Capital Management Office of Chief Financial Officer Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE) Office of Procurement and Assistance Management
<p><u>Description:</u> The following elements are some of the core components of this corrective measure:</p> <ul style="list-style-type: none"> ▪ Baseline existing contract and project management personnel and organization. ▪ Benchmark contract and project management functions and personnel in other federal agencies. ▪ Conduct a contract and project management personnel resources needs assessment. ▪ Conduct a gap analysis between federal benchmarks, results of needs assessment, and current baseline. ▪ Identify the number, qualifications, and skills required of additional personnel by organization. ▪ Develop a resource plan to acquire additional federal personnel, if applicable. ▪ Review appropriate personnel compensation incentives and encourage their use, where appropriate. ▪ Analyze and recommend revisions to the existing contract and project management staffing structure. ▪ Clearly define and document the roles, responsibilities, authority, and accountability for all contract and project management personnel. ▪ Identify and implement contract and project management training in specific areas of need. ▪ Garner input and approval of implementation plan from appropriate stakeholders and senior leadership. 	
<u>Impediments/Challenges:</u> <ul style="list-style-type: none"> ▪ Competing Departmental priorities and change in Administration ▪ Re-allocation of necessary budget and personnel resources ▪ Organizational culture and resistance to change 	
<u>Accomplishments to Date:</u> <ul style="list-style-type: none"> ▪ EM "Best in Class" initiative; an EM initiative to improve EM contract and project management ▪ DOE Acquisition Career Management Program for certifying contract managers and contracting officer's representative (COR) ▪ Project Management Career Development Program ▪ Contracting competency/resource gap analyses across the complex ▪ Targeted training delivered across the complex 	<u>Some Remaining Near-Term Actions:</u> <ul style="list-style-type: none"> ▪ Benchmarking and Gap Analysis ▪ Recruit additional federal staff, as needed ▪ Enhancement to training programs ▪ Re-allocation of resources, as appropriate ▪ Stakeholders support and approval
<u>Expected Outcomes/Key Success Measures:</u> <ul style="list-style-type: none"> ▪ Outcome: Fully staffed, right-sized federal contract and project management organization. ▪ Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals. ▪ Metric: By the end of FY 2011, federal contract and project management positions (based on new model) are staffed at 80% of the desired level. ▪ Metric: By the end of FY 2011, 95% of projects have certified FPDs no later than CD-1. ▪ Metric: By the end of FY 2011, 90% of projects have FPDs certified at the appropriate level assigned to projects no later than CD-3. ▪ Metric: By the end of FY 2011, 85% of the 1102 contracting series will be certified. 	

CORRECTIVE MEASURE 3

Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.

Issue:

Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.

Root Causes:

- Insufficient number of personnel
- Inadequate training
- Lack of management emphasis and direction
- Lack of recognition of required number and skills of personnel needed

Organizational Sponsor:

Jack Surash
Deputy Assistant Secretary
Office of Acquisition and Project Management
Office of Environmental Management

Supporting Organizations:

Office of Engineering and Construction Management
National Nuclear Security Administration
Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE)
Office of Chief Financial Officer

Description: The following elements are some of the core components of this corrective measure:

- Clearly define the types of project risks (including programmatic risk and technical risk related to technology readiness).
- Develop standard methods to assess and manage project risks starting at front-end planning and continuing through project completion.
- Establish risk communication protocols and methodologies.
- Establish consistent protocol for the definition, development, funding, and use of management reserve and contingency as a key part of the policy and guidance on project cost estimation.
- Establish procedures to encourage, recognize, and reward project teams that do not use all management reserve and contingency.
- Provide consistent risk management training and mentoring across programs and projects.
- Develop processes that describe how risks (including the management, mitigation, and response) can be transferred, when appropriate, either in whole or part, from a project to a site or HQ program.
- Establish risk management as an essential performance element for a FPD position.
- Establish a cadre of risk management experts who can assist/supplement the project team.
- Develop and implement risk management training and mentoring.
- Establish ongoing web-based risk management training and communication to establish a network community on the subject.
- Provide human capital and skill gap analysis and recommendations for the area of project risk management to the Corrective Measures 2 team.

Impediments/Challenges:

- Aligning results of the many risk assessment techniques: TRL, PDRI, interviewing, brainstorming, corporate experience, lesson learned, etc.
- Organizational culture and resistance to change allowing projects to proceed based on program and budget priorities instead of project maturity
- Differences in methodologies throughout DOE/NNSA in both the Federal and contractor communities
- Inadequate resources for risk management, including funding, human resources, and training

CORRECTIVE MEASURE 3

Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.

Accomplishments to Date:

- DOE 413.3 manual
- Established the Office of Cost Analysis
- Developed and delivered Risk Management training modules in the Project Management Career Development Program
- Standard 1189 "Integration of Safety into the Design Process"
- EM "Best in Class" initiative; an EM initiative to improve EM contract and project management

Some Remaining Near-Term Actions:

- Completing Project Management Guides
- Revising applicable sections of DOE Order 413.3A
- Creating E-learning opportunities in Risk Management

Expected Outcomes/Key Success Measures:

- Outcome: Realistic project plans. Cost and schedule baselines are developed and reviewed using consistent and standard risk analysis tools and expertise.
- Outcome: Increased visibility of project risk discussions in project reviews.
- Outcome: Stronger correlation between project risks and the use of management reserve and contingency.
- Outcome: Protocol for the development, funding, and use of management reserve and contingency.
- Outcome: Protocol for risk assessment and management.
- Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals.
- Metric: By the end of FY 2011, for all capital asset line item projects that are completed at CD-4, 50% are completed below their currently approved TPC with some contingency and/or management reserve remaining.

CORRECTIVE MEASURE 4

Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.

<p><u>Issue:</u> Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.</p>	<p><u>Root Causes:</u></p> <ul style="list-style-type: none"> ▪ Ineffective project and program prioritization ▪ Inadequate resource allocation
<p><u>Organizational Sponsor:</u> Jack Surash Deputy Assistant Secretary Office of Acquisition and Project Management Office of Environmental Management</p>	<p><u>Supporting Organizations:</u> Office of Program Analysis and Evaluation Office of Chief Financial Officer Office of Engineering and Construction Management National Nuclear Security Administration Office of Science Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE)</p>
<p><u>Description:</u> The following elements are some of the core components of this corrective measure:</p>	
<ul style="list-style-type: none"> ▪ Institutionalize the use of independent government cost estimates to improve the quality of project cost estimates. ▪ Establish policy and procedures for requiring funding profiles to be front-end loaded relative to project cost baselines to avoid project cost growth caused by budget delays. ▪ Establish "full funding" policy to promote full funding of smaller projects to minimize risk exposure, and allow projects to be scheduled based on optimum construction management practices, not be scheduled driven by incremental funding profiles. ▪ Establish procedures to include individual "project affordability" as a part of project validation, in the context of the Program's five-year budget profile. 	
<p><u>Impediments/Challenges:</u></p> <ul style="list-style-type: none"> ▪ Effective prioritization and allocation of resources based on competing priorities and political pressures ▪ External stakeholders resistance to allow full funding and front-end loaded funding profiles ▪ Current budget request and Congressional authorization processes regarding full funding of DOE projects ▪ Organizational culture and resistance to change 	
<p><u>Accomplishments to Date:</u></p> <ul style="list-style-type: none"> ▪ Established cost assessment group in the OCFO 	<p><u>Some Remaining Near-Term Actions:</u></p> <ul style="list-style-type: none"> ▪ Use of independent government cost estimates to validate and improve estimates ▪ DOE policy on full funding and front-end loaded funding profiles ▪ Improve Budget Guidance ▪ Completing Project Management Guides ▪ Stakeholder support and approval
<p><u>Expected Outcomes/Key Success Measures:</u></p> <ul style="list-style-type: none"> ▪ Outcome: Improved accuracy and alignment between project cost baselines and annual budget requests. ▪ Outcome: Minimal project cost and schedule impacts from annual budget allocation. ▪ Outcome: Uninterrupted project execution due to federal budget delays and continuing resolutions. ▪ Outcome: Policy for full/forward funding of projects established. ▪ Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals. ▪ Metric: By the end of FY 2013, 80% of capital asset line item projects (less than \$50 million) are fully funded in one Fiscal Year (one Appropriation). 	

<u>CORRECTIVE MEASURE 5</u>	
Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.	
<u>Issue:</u> Contracts for projects are too often awarded prior to the development of an adequate independent government cost estimate.	<u>Root Causes:</u> <ul style="list-style-type: none"> ▪ Lack of policy or standards ▪ Lack of personnel with the appropriate skills ▪ Lack of databases with current or historical information
<u>Organizational Sponsor:</u> Barry Berkowitz Director Office of Cost Analysis Office of Chief Financial Officer	<u>Supporting Organizations:</u> Office of Project Management and System Support, National Nuclear Security Administration Office of Engineering and Construction Management Office of Environmental Management Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE) Office of Procurement and Assistance Management
<p><u>Description:</u> The following elements are some of the core components of this corrective measure:</p> <ul style="list-style-type: none"> ▪ Develop the DOE Cost Estimating Order and Cost Estimating Manual to establish DOE cost estimating requirements and guidance, as well as requirements for independent cost reviews and independent government cost estimates. ▪ Develop cost estimating training course, and implement training to include independent government cost estimates. ▪ Develop historical cost database to improve cost estimating accuracy. ▪ Conduct independent cost reviews and independent government estimates. ▪ Develop lessons learned from independent cost reviews, and identify corrective actions. ▪ Develop policy/guidance on definition, development, and use of escalations rates based on industry and geographic trends. 	
<p><u>Impediments/Challenges:</u></p> <ul style="list-style-type: none"> ▪ The Office of Cost Analysis is new, and there will be challenges of standing-up a new organization ▪ Organizational culture and resistance to change 	
<u>Accomplishments to Date:</u>	<p><u>Some Remaining Near-Term Actions:</u></p> <ul style="list-style-type: none"> ▪ Establish cost estimating and analysis office in the OCFO, responsible for all cost estimating in the Department ▪ Develop new DOE Cost Estimating Order to include project requirements for Independent Cost Reviews, Independent Cost Estimates, and Independent Government Estimates ▪ Develop Cost Estimating Manual ▪ Develop Cost Estimating Training Course ▪ Establish project cost database ▪ Initiate independent cost reviews and independent government estimates
<p><u>Expected Outcomes/Key Success Measures:</u></p> <ul style="list-style-type: none"> ▪ Outcome: Improved competitive solicitation processes and contract management. ▪ Outcome: Improved accuracy of project cost estimates and baselines. ▪ Outcome: Historical project cost information used as benchmarks for future projects. ▪ Outcome: Improved guidance on project escalation rates aligned with industry trends. ▪ Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals. ▪ Metric: By the end of FY 2010, establish and staff (at 80% of authorized FTEs) a cost estimating and analysis organization in the Chief Financial Officer, Office of Cost Analysis (CF-70) organization. ▪ Metric: By the end of FY 2011, 80% of contract awards are within plus or minus 25% of independent government cost estimates. 	

CORRECTIVE MEASURE 6

Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans, and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.

Issue:

DOE's acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.

Root Causes:

- Lack of personnel with the appropriate skills
- Competing priorities
- Personnel resource conflicts and budget limitations
- Lack of effective field and headquarters integration
- Lack of lessons learned
- Inadequate roles and responsibilities definition

Organizational Sponsor:

Ed Simpson
Director
Office of Procurement and Assistance Management
Office of Management

Supporting Organizations:

National Nuclear Security Administration
Office of Engineering and Construction Management
Office of Environmental Management
Office of General Counsel
Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE)

Description: The following elements are some of the core components of this corrective measure:

- Review existing directives, policy, guidance, etc., pertaining to development of acquisition strategies, project plans and acquisition plans including integrated project teams; roles and responsibilities of FPDs, Contracting Officers, etc.
- Review training requirements of FPDs in the Project Management Career Development Program related to the development of acquisition strategies, project plans, and acquisition plans and to ensure alignment with responsibilities of performing as a COR.
- Perform a process flow analysis regarding the extent to which program offices do, or do not, integrate project management with contract management in the development of acquisition strategies, project plans, and acquisition plans.
- Perform a benchmark analysis on other Federal agencies regarding the development of acquisition strategies and plans.
- Review and assess output from Corrective Measures 1 – 3 for applicability in resolving the issues under this measure.
- Perform gap analysis to ensure identification of gaps and vulnerabilities in Departmental guidance, procedures, etc., which may contribute to, or exacerbate, issues relating to ineffective and/or late acquisition strategies and plans.
- Recommend specific actions to resolve identified gaps and challenges.
- Incorporate approved recommendations.

Impediments/Challenges:

- Historical over-reliance on the M&O contractors
- Pressure to rapidly award contracts to meet project schedules
- Continued coordination and integration challenges between headquarters line and staff offices and between headquarters and the field
- Organizational resistance to change

Accomplishments to Date:

- Two NNSA Requests for Information issued
- Draft Acquisition Strategy Guide near completion
- Integrated Project Team Guide is in draft
- EM "Best in Class" initiative; an EM initiative to improve EM contract and project management

Some Remaining Near-Term Actions:

- Complete Acquisition Strategy Guide

CORRECTIVE MEASURE 6

Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans, and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.

Expected Outcomes/Key Success Measures:

- Outcome: Improved alignment between project requirements and contracting strategies and plans.
- Outcome: Better integration between contract management and project management.
- Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals.
- Metric: By the end of FY 2011, achieve a contract specialist to contract value ratio of 1 per \$X* million or less. (* The staffing study will establish the appropriate benchmark factor "X" to be applied.)

CORRECTIVE MEASURE 7

Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

<p><u>Issue:</u> DOE's organizational structure is not optimized for managing projects.</p>	<p><u>Root Causes:</u></p> <ul style="list-style-type: none"> ▪ Competing priorities ▪ Lack of prioritization on project management ▪ Lack of alignment in authority, accountability, and responsibility ▪ Attributes of optimized organizational structure are not understood
<p><u>Issue:</u> Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner</p>	<p><u>Root Causes:</u></p> <ul style="list-style-type: none"> ▪ Inadequate budget and personnel resources ▪ Competing and conflicting resource priorities ▪ Inadequate field oversight
<p><u>Issue:</u> DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.</p>	<p><u>Root Causes:</u></p> <ul style="list-style-type: none"> ▪ Inconsistent expectations and definition of federal ownership role ▪ Lack of personnel with the appropriate skills ▪ Limited authority of FPDs ▪ Lack of accountability
<p><u>Organizational Sponsor:</u> Bob Raines Director, Project Management Systems & Assessments Office of Engineering and Construction Management Office of Management</p>	<p><u>Supporting Organizations:</u> Office of Environmental Management National Nuclear Security Administration Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE) Office of Procurement and Assistance Management Office of Program Analysis and Evaluation</p>
<p><u>Description:</u> The following elements are some of the core components of this corrective measure:</p> <ul style="list-style-type: none"> ▪ Clearly define and document the roles, responsibilities, and authorities for all personnel assigned to various project and contract oversight and management functions within DOE. ▪ Identify redundancies and gaps within and between field and headquarters organizations, functions, authorities, and responsibilities. ▪ Establish a benchmark of DOE and other federal agency contract and project management organizations and associated roles, responsibilities, and authorities; then compare and contrast these benchmarks to identify gaps and areas of improvement for DOE. ▪ Implement changes, if warranted, to organizational structures and functions to improve the effectiveness and efficiency of the management and oversight of contracts and projects, and establish clear ownership responsibility. ▪ Establish checklist for performing contract and project oversight (may be in the form of a comprehensive project oversight plan). ▪ Ensure accountability of personnel responsible for project oversight functions. ▪ Establish project and contract controls requirements, guidelines, and training. ▪ Implement standardized project and contract management performance metrics and reporting requirements. ▪ Develop and deploy a replacement to the Project Assessment and Reporting System (PARS) information management system. ▪ Ensure integration of project and contract management organizations and functions in the performance of oversight. ▪ Strengthen existing external independent reviews and internal project reviews to ensure project and contract oversight compliance. 	

CORRECTIVE MEASURE 7

Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures.

Impediments/Challenges:

- Minimizing headquarters and site authorities providing project direction
- Organizational culture and resistance to change
- Lack of a project oversight benchmark
- Lack of communication/coordination at staff levels between Headquarters and Field personnel

Accomplishments to Date:

- Establishment of DOE Order 413.3A
- Earned Value Management (EVM) System Certification Program

Some Remaining Near-Term Actions:

- Benchmark DOE and other federal agency contract and project management organizations
- PARS replacement information management system

Expected Outcomes/Key Success Measures:

- Outcome: Streamlined oversight for contract and project management.
- Outcome: Increased federal and contractor accountability for project and contract performance.
- Outcome: A revised Departmental structure more effectively aligned and organized to carry out contract and project management functions.
- Outcome: Improved project and contract performance metrics.
- Outcome: Completed external and internal project reviews documenting improved project oversight.
- Outcome: PARS replacement with operating manual.
- Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals.
- Metric: By the end of FY 2012, achieve a FPD (including Deputy FPD(s), as applicable) to annual work in place ratio of 1 per \$X* million or less, and/or in accordance with the staffing study. (* The staffing study will establish the appropriate benchmark factor "X" to be applied.)
- Metric: For projects post CD-3, by the end of FY 2011 and FY 2012, 95% of cost reimbursable capital asset line item projects (greater than \$20 million) and cost reimbursable EM cleanup projects, respectively, use certified EVM systems.
- Metric: By the end of FY 2011, on a program portfolio basis, 90% of all projects will meet the project schedule metric that follows: from CD-3 to CD-4, for projects less than five years in duration, they will be completed within 12 months of the original CD-3/4 duration.
- Metric: By the end of FY 2011, on a program portfolio basis, 90% of all projects will meet the project schedule metric that follows: from CD-3 to CD-4, for projects greater than five years in duration, they will be completed within 20% of the original CD-3/4 duration.

CORRECTIVE MEASURE 8

Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.

<p><u>Issue:</u> DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.</p>	<p><u>Root Causes:</u></p> <ul style="list-style-type: none"> ▪ Conflicting guidance and priorities ▪ Lack of adequate personnel resources ▪ Inadequate training ▪ Lack of failed project reviews
<p><u>Organizational Sponsor:</u> Paul Bosco Director Office of Engineering and Construction Management Office of Management</p>	<p><u>Supporting Organizations:</u> Office of Environmental Management National Nuclear Security Administration Office of Science Office of Under Secretary or Other Program Office Rep (e.g., RW, EE, NE, FE)</p>
<p><u>Description:</u> The following elements are some of the core components of this corrective measure:</p>	
<ul style="list-style-type: none"> ▪ Review various program and project management policies and guidance for consistency; ensure consistent and standard definitions for terms. ▪ Develop a checklist of all phases of project management to assess compliance with requirements. ▪ Clearly define and document the roles, responsibilities, and authorities for project management personnel throughout all phases of project management and establish clear ownership responsibility. ▪ Identify best management practices in DOE programs and document and transfer across and between programs, as appropriate. ▪ Update DOE Order 413.3A. 	
<p><u>Impediments/Challenges:</u></p> <ul style="list-style-type: none"> ▪ Ownership to specific procedures and guidance developed by specific programs ▪ Organizational culture and resistance to change 	<p><u>Some Remaining Near-Term Actions:</u></p> <ul style="list-style-type: none"> ▪ Update DOE Order 413.3A ▪ Complete 413 Guides ▪ Improve compliance oversight
<p><u>Accomplishments to Date:</u></p> <ul style="list-style-type: none"> ▪ Establishment of DOE Order 413.3A 	
<p><u>Expected Outcomes/Key Success Measures:</u></p> <ul style="list-style-type: none"> ▪ Outcome: Eliminate competing and conflicting project guidance and direction. ▪ Outcome: Increased accountability and compliance with project management requirements. ▪ Metric: By the end of FY 2011 and 2012, 90% of DOE capital asset line item projects and 90% of EM cleanup projects, respectively, will meet their overall performance baseline goals. ▪ Metric: By the end of FY 2011, 95% of projects have certified FPDs no later than CD-1. ▪ Metric: By the end of FY 2011, 90% of projects have FPDs certified <u>at the appropriate level</u> assigned to projects no later than CD-3. ▪ Metric: For projects post CD-3, by the end of FY 2011 and FY 2012, 95% of cost reimbursable capital asset line item projects (greater than \$20 million) and cost reimbursable EM cleanup projects, respectively, use certified EVM systems. 	

Chapter 3

Summary and Next Steps

The Department has made a steadfast commitment to making tangible improvements in contract and project management performance. This commitment permeates the Department, from DOE Headquarters to field offices and begins with the Secretary of Energy and cascades to a multitude of contract, project, and financial management professionals. This is a long-term commitment; the nature and duration of project execution, and the timeline required to document it require nothing less. The life cycle for projects can extend for many years and sometimes decades. This CAP is the Department's plan to develop, prioritize, and implement the necessary corrective measures to successfully address the most significant challenges and underlying causes facing contract and project management today and in the future. These corrective measures represent the most significant efforts to date for improving the Department's contract and project management performance.

This CAP demonstrates the Department's overarching approach to eliminating or mitigating contract and project management issues and associated root causes. It establishes the broad framework for improving contract and project management based on the findings from the RCA. For each of the eight corrective measures identified in this CAP, cross-functional Departmental teams are responsible for developing and maintaining detailed plans of action and milestones. Due to finite personnel and monetary resources, and other competing activities, the corrective measures and associated detailed plans of action and milestones will have staggered start dates. This is reflected in Appendix A.

The priority for the start and review of corrective measures is based on the relative significance of the contract and project management issues identified through the Department's RCA process. For example, the most significant issue identified in the RCA was the lack of adequate front-end planning. As a result, the corrective actions associated with the Department's inadequate front-end planning will be addressed first. The one exception is with Corrective Measure 4, Improve Funding and Baseline Alignment. It displaced Corrective Measure 3, Strengthen Risk Management. This was done to allow any new funding policies to become effective before the next budget cycle.

Accordingly, the goal is to start three corrective measures (Nos. 1, 2, 4) within six months of approval and publication of this CAP. The next three corrective measures (Nos. 3, 5, 6) will be started approximately six months after CAP publication. The remaining two (Nos. 7 and 8) will be initiated no later than twelve months following CAP approval and publication. These macro milestones will be refined as each corrective measure team completes and refines their plans of action and milestones, with implementation of all corrective measures within three years of CAP approval. The key to achieving improvements will be the effective implementation of these corrective measures.

Each corrective measure team will be responsible for developing recommended actions. The organizational sponsor will be held responsible and accountable for the timely development of their respective corrective measure. Prior to implementation, these actions will be briefed to an Executive Steering Committee (ESC). The ESC will be the overarching committee providing direction to each corrective measures team, ensuring proper team integration, coordination of corrective measure development and implementation, and monitoring their performance. The ESC will be chaired by the Director of the Office of Management and comprised of representatives from the Office of Engineering and Construction Management (OECM), the Program Management Support Offices, and others. They will be responsible for overseeing the entire process. The ESC will ultimately be responsible for ensuring that corrective measures are effectively established and implemented to bring about the lasting improvement to contract and project management performance.

In some cases, implementing the recommended actions from the corrective measures teams should be relatively straightforward and could be initiated immediately. In other cases involving significant organizational changes and other major impacts, senior leadership approval will be required. Recommendations involving significant changes will require the respective teams to brief senior management on proposed courses of action. Under no circumstance will actions be implemented without briefing the ESC, the affected organizations, and the appropriate senior leadership.

These corrective measures will be monitored, measured, and reported quarterly to senior leadership starting within 60 days of CAP approval. OECM will take the lead in this effort. The progress of each team will be reported monthly, including identification of variances and implementation of corrective actions to maintain the overall plan and schedule. Team members will be responsible for corrective measure implementation, after appropriate approval, and the lead sponsor will be accountable for ensuring successful execution and completion. Each of these corrective measures will be coordinated and specific plans and milestones established for each to ensure proper, timely execution. The corrective measures will be monitored and tracked against clearly defined metrics to ensure success.

In addition to discrete metrics for specific corrective measures, the Department will also develop, monitor, and report on overarching contract and project management metrics. The proposed overarching metrics include: the performance goal for capital asset line item projects; the performance goal for EM cleanup projects; and the percentage of certified EVM systems used to manage contracts and projects. Of course, the primary success metric will be the Department's project and portfolio success rate. These metrics will be measured and reported annually and include a three-year rolling average to determine positive or negative contract and project management performance trends.

Real, sustainable, and measurable contract and project management performance improvement requires a DOE organizational and leadership commitment to continuous improvement. Each of the Departmental organizations identified in the CAP share the responsibility for the success of this plan. The development and implementation of successful corrective measures is a Department-wide effort requiring everyone's support.

Implementation of this plan is a significant step toward fundamentally reshaping the contract and project management culture within the Department. Clearly, further investments will be necessary in the areas of human capital management, organizational alignment and integration, prioritization and resource allocation, and management systems. The focus will be in the areas of project definition and front-end planning, cost estimating, risk management, acquisition strategy decisions and plans, and overall project oversight. Collectively, these investments will strengthen the rigor and discipline in DOE contract and project management and result in dramatic improvements in project execution delivery, on time and on budget making the Department a stronger and more effective project owner.

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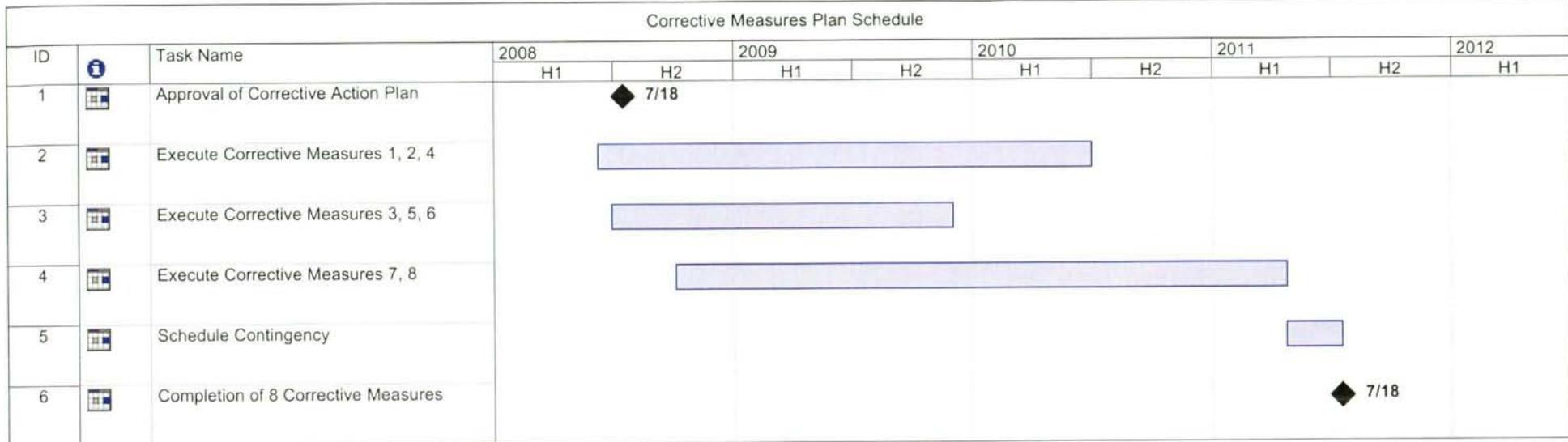
Appendix A

Corrective Measure Sequencing Schedule

Appendix A contains a summary, high-level schedule for completing the corrective measures. More detail regarding the specific activities to successfully complete each corrective measure is included within Appendix B, Section VIII Major Initiatives.

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Corrective Measures Plan Schedule



A-3

Project: DOE Corrective Action Plan	Task		Rolled Up Task		External Tasks	
	Progress		Rolled Up Milestone		Project Summary	
	Milestone		Rolled Up Progress		Group By Summary	
	Summary		Split		Deadline	

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Appendix B

Department of Energy Contract and Project Management High Risk Plan

Appendix B contains the Department of Energy Contract and Project Management High Risk Plan. The content of the High Risk Plan is consistent with the Department's Contract and Project Management RCA CAP. This appendix will be used as the primary reporting tool to OMB and other external stakeholders as appropriate. It will facilitate progress and status reporting over time as the corrective measures are implemented. The corrective measure plan of action and milestones reflected within Section VIII Major Initiatives may be modified over time to accommodate the results and finding of related corrective measures. The overall schedule objective remains fixed—to complete all the corrective measures within three years of CAP publication.

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High Risk: Department of Energy Contract and Project Management

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I. Scope: Contract and project management, including improving contract administration and the management and oversight of projects.

II. Overall: Demonstrate improved contractor and project performance, including achievement of planned cost, schedule, and performance goals, by strengthening the Department's oversight and management of contracts and projects.

III. Focus Areas (Corrective Measures):

1. Improve Project Front-End Planning: Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution. (Corrective Measure 1. Organizational Sponsor: Thad Konopnicki, Deputy Associate Administrator, Office of Infrastructure and Environment, National Nuclear Security Administration)

- Establish a more detailed internal front-end planning process, including planning metrics to ensure preliminary project scope statements are in place prior to CD-1 and detailed project scope definitions are in place prior to CD-2, and limit follow-on scope creep.
- Develop a uniform set of front-end planning requirements/criteria/benchmarks including readiness of critical technologies.
- Identify and define specific and bounding assumptions for associated technical design and nuclear safety requirements by CD-1.
- Identify and allocate the appropriate resources to effectively complete front-end planning
- Perform independent reviews to ensure the appropriate level of planning is complete prior to project approval and additional resource allocation.
- Include research, development, demonstration, and implementation of critical technologies in front-end planning basis of projects beginning no later than CD-1, as appropriate.
- Develop improved program management requirements/guidance and training that enables better planning, management, execution, budgeting, and oversight of large programs and their projects.
- Break large programs/projects into smaller stand-alone projects, as appropriate.
- Establish clear federal ownership responsibility for front-end planning.
- Ensure that all viable alternatives have been considered and that a thorough life cycle cost analysis has been performed.
- Ensure that project requirements are tied to strategic program objectives/plans.

2. **Enhance the Federal Contract and Project Management Workforce:** Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce. (Corrective Measure 2. Organizational Sponsor: Pete Check, Deputy Director, Office of Engineering and Construction Management, Office of Management)
- Baseline existing contract and project management personnel and organization.
 - Benchmark contract and project management functions and personnel in other federal agencies.
 - Conduct a contract and project management personnel resources needs assessment.
 - Conduct a gap analysis between federal benchmarks, results of needs assessment, and current baseline.
 - Identify the number, qualifications, and skills required of additional personnel by organization.
 - Develop a resource plan to acquire additional federal personnel, if applicable.
 - Review appropriate personnel compensation incentives and encourage their use, where appropriate.
 - Analyze and recommend revisions to the existing contract and project management staffing structure.
 - Clearly define and document the roles, responsibilities, authority, and accountability for all contract and project management personnel.
 - Identify and implement contract and project management training in specific areas of need.
 - Garner input and approval of implementation plan from appropriate stakeholders and senior leadership.
3. **Improve Project Risk Assessment, Communication, and Management:** Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency. (Corrective Measure 3. Organizational Sponsor: Jack Surash, Deputy Assistant Secretary, Office of Acquisition and Project Management, Office of Environmental Management)
- Clearly define the types of project risks (including programmatic risk and technical risk related to technology readiness).
 - Develop standard methods to assess and manage project risks starting at front-end planning and continuing through project completion.
 - Establish risk communication protocols and methodologies.
 - Establish consistent protocol for the definition, development, funding, and use of management reserve and contingency as a key part of the policy and guidance on project cost estimation.
 - Establish procedures to encourage, recognize, and reward project teams that do not use all management reserve and contingency.
 - Provide consistent risk management training and mentoring across programs and projects.
 - Develop processes that describe how risks (including the management, mitigation, and response) can be transferred, when appropriate, either in whole or part, from a project to a site or HQ program.
 - Establish risk management as an essential performance element for a FPD position.
 - Establish a cadre of risk management experts who can assist/supplement the project team.
 - Develop and implement risk management training and mentoring.
 - Establish ongoing web-based risk management training and communication to establish a network community on the subject.

- Provide human capital and skill gap analysis and recommendations for the area of project risk management to the Corrective Measure 2 team.
4. **Align and Integrate Budget Profiles and Project Cost Baselines:** Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.
(Corrective Measure 4. Organizational Sponsor: Jack Surash, Deputy Assistant Secretary, Office of Acquisition and Project Management, Office of Environmental Management)
- Institutionalize the use of independent government cost estimates to improve the quality of project cost estimates.
 - Establish policy and procedures for requiring funding profiles to be front-end loaded relative to project cost baselines to avoid project cost growth caused by budget delays.
 - Establish “full funding” policy to promote full funding of smaller projects to minimize risk exposure, and allow projects to be scheduled based on optimum construction management practices, not be scheduled driven by incremental funding profiles.
 - Establish procedures to include individual “project affordability” as a part of project validation, in the context of the Program’s five-year budget profile.
5. **Improve Independent Government Cost Estimates:** Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases. (Corrective Measure 5. Organizational Sponsor: Barry Berkowitz, Director, Office of Cost Analysis, Office of the Chief Financial Officer)
- Develop the DOE Cost Estimating Order and Cost Estimating Manual to establish DOE cost estimating requirements and guidance, as well as requirements for independent cost reviews and independent government cost estimates.
 - Develop cost estimating training course, and implement training to include independent government cost estimates.
 - Develop historical cost database to improve cost estimating accuracy.
 - Conduct independent cost reviews and independent government estimates.
 - Develop lessons learned from independent cost reviews, and identify corrective actions.
 - Develop policy/guidance on definition, development, and use of escalations rates based on industry and geographic trends.
6. **Improve Acquisition Strategies and Plans:** Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans, and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration. (Corrective Measure 6. Organizational Sponsor: Ed Simpson, Director, Office of Procurement and Assistance Management, Office of Management)
- Review existing directives, policy, and guidance pertaining to development of acquisition strategies, project plans and acquisition plans including integrated project teams; roles and responsibilities of FPDs, Contracting Officers, etc.
 - Review training requirements of FPDs in the Project Management Career Development Program related to the development of acquisition strategies, project plans and acquisition plans and to ensure alignment with responsibilities of performing as a COR.

- Perform a process flow analysis regarding the extent to which program offices do, or do not, integrate project management with contract management in the development of acquisition strategies, project plans, and acquisition plans.
 - Perform a benchmark analysis on other Federal agencies regarding the development of acquisition strategies and plans.
 - Review and assess output from Corrective Measures 1 – 3 for applicability in resolving the issues under this measure.
 - Perform gap analysis to ensure identification of gaps and vulnerabilities in Departmental guidance and procedures which may contribute to, or exacerbate, issues relating to ineffective and/or late acquisition strategies and plans.
 - Recommend specific actions to resolve identified gaps and challenges.
 - Incorporate approved recommendations.
7. **Improve Project Oversight and Management:** Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities, including field and headquarters integration; establish a project oversight benchmark; and align the program and project organizational structures. (Corrective Measure 7. Organizational Sponsor: Bob Raines, Director of Project Management Systems and Assessments, Office of Engineering and Construction Management, Office of Management)
- Clearly define and document the roles, responsibilities, and authorities for all personnel assigned to various project and contract oversight and management functions within DOE.
 - Identify redundancies and gaps within and between field and headquarters organizations, functions, authorities, and responsibilities.
 - Establish a benchmark of DOE and other federal agency contract and project management organizations and associated roles, responsibilities, and authorities; then compare and contrast these benchmarks to identify gaps and areas of improvement for DOE.
 - Implement changes, if warranted, to organizational structures and functions to improve the effectiveness and efficiency of the management and oversight of contracts and projects, and establish clear ownership responsibility.
 - Establish checklist for performing contract and project oversight (may be in the form of a comprehensive project oversight plan).
 - Ensure accountability of personnel responsible for project oversight functions.
 - Establish project and contract controls requirements, guidelines, and training.
 - Implement standardized project and contract management performance metrics and reporting requirements.
 - Develop and deploy a replacement to the Project Assessment and Reporting System (PARS) information management system.
 - Ensure integration of project and contract management organizations and functions in the performance of oversight.
 - Strengthen existing external independent reviews and internal project reviews to ensure project and contract oversight compliance.

- 8. Improve Adherence to Project Management Requirements:** Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable. (Corrective Measure 8. Organizational Sponsor: Paul Bosco, Director, Office of Engineering and Construction Management, Office of Management)
- Review various program and project management policies and guidance for consistency; ensure consistent and standard definitions for terms.
 - Develop a checklist of all phases of project management to assess compliance with requirements.
 - Clearly define and document the roles, responsibilities, and authorities for project management personnel throughout all phases of project management and establish clear ownership responsibility.
 - Identify best management practices in DOE programs and document and transfer across and between programs, as appropriate.
 - Update DOE Order 413.3A.

IV. Process:

1. DOE conducts a contract and project management RCA.
2. DOE identifies significant contract and project management deficiencies based on RCA.
3. DOE develops eight focus areas and corrective measures to address identified deficiencies.
4. DOE identifies overarching and specific corrective measure metrics and performance targets.
5. DOE identifies plans of action and milestones for achieving corrective measure metrics and targets.
6. OMB/GAO/DOE concur on corrective measures, metrics, targets, and milestones.
7. DOE implements corrective measures.
8. DOE manages and monitors progress quarterly.
9. DOE reports progress to OMB/GAO with semi-annual meetings and quarterly reports.

V. Responsible Organizations:

The Director, Office of Management, is responsible for identifying the focus areas, corrective measures, metrics, and overseeing the initiatives cited in this plan. The organizational sponsors are responsible for the development of their corrective measures. The ESC will oversee the entire process, to include implementation.

VI. Goals:

The Department's goal under this plan is to strengthen the DOE performance in managing contracts and projects as demonstrated by improved project performance. Specific performance goals are provided below:

- ◆ **Capital Asset Line Item Projects:** Capital asset line item projects will be completed at Critical Decision 4 within the original approved scope baseline and within 10 percent of the original approved cost baseline (Critical Decision 2), unless otherwise impacted by a directed change.¹

¹ Directed Change: Changes, as validated by OECM, caused by DOE Policy Directive, Regulatory, or Statutory action. Directed changes, with the exception of policy directives, are external to the Department, to include external funding reductions. (Directed change decisions will be reviewed and validated by OMB periodically.)

Baselines impacted by a directed change will have adjusted baselines established. On a project portfolio basis, 90 percent of DOE line item projects will meet the project success definition benchmark.

- ◆ EM Cleanup (Soil and Groundwater Remediation, D&D, and Waste Treatment and Disposal) Projects: EM cleanup projects will be completed by achieving at least 80 percent of the defined near-term baseline end-state scope (Critical Decision 2) with less than a 25 percent cost variance from the original approved baseline, unless impacted by a directed change. On a project portfolio basis, 90 percent of EM cleanup projects will meet the project success definition benchmark.

VII. Metrics, Baselines, and Fiscal Year Targets.

1. Overall Performance Metrics and Targets

The three metrics included in Table B-1 are the Department's overarching primary metrics to monitor progress towards achieving success. DOE's primary goal is to improve contract and project management over time, and the secondary goal is to be removed from GAO's High Risk List for "Contract Management." Relative to this secondary goal, the emphasis will be on the three primary deficiencies noted within the GAO report; namely "inadequate management and [inadequate] oversight of contractors and failure to hold contractors accountable." These metrics represent the yardstick towards achieving the goals while recognizing that some of these stretch goals may not be achieved in the near term. They are meant to demonstrate that the Department has the capacity (people and resources) to resolve the past contract and project management problems and that, over time, can monitor and independently validate the effectiveness and sustainability of the corrective measures.

Table B-1 – Overall Contract and Project Management Performance Metrics and Targets

Contract/Project Management Performance Metrics	FY 2008	FY 2009 Target	FY 2010 Target	FY 2011 Target	FY 2012 Target
Capital Asset Line Item Projects: Capital asset line item projects will be completed at Critical Decision 4 within the original scope baseline and within 10 percent of the original approved cost baseline (Critical Decision 2), unless otherwise impacted by a directed change. Baselines impacted by a directed change will have adjusted baselines established. On a program portfolio basis, 90 percent of DOE line item projects will meet the project success definition benchmark.	75% ²	80%	85%	90%	-

² The performance targets are based on a three-year rolling average of projects reaching CD-4. The FY 2008 target is based on projects reaching CD-4 in the 2006 – 2008 time frame. Subsequent FY targets include projects reaching CD-4 in the respective subsequent three years.

Table B-1 – Overall Contract and Project Management Performance Metrics and Targets

Contract/Project Management Performance Metrics	FY 2008	FY 2009 Target	FY 2010 Target	FY 2011 Target	FY 2012 Target
EM Cleanup (Soil and Groundwater Remediation, D&D, and Waste Treatment and Disposal) Projects: EM cleanup projects will be completed by achieving at least 80 percent of the defined near-term baseline end-state scope (Critical Decision 2) with less than a 25 percent cost variance from the original approved baseline, unless impacted by a directed change. On a program portfolio basis, 90 percent of EM cleanup projects will meet the project success definition benchmark. ³	Establish Baseline ⁴	Establish Baseline ⁴	70% ⁴	80%	90%
Certified EVM Systems: For projects post CD-3, by the end of FY 2011 and FY 2012, 95% of cost reimbursable capital asset line item projects (greater than \$20 million) and cost reimbursable EM cleanup projects, respectively, use certified EVM systems. ⁵	65% Line Item 55% EM	85% Line Item 65% EM	90% Line Item 75% EM	95% Line Item 85% EM	- 95% EM

2. Corrective Measure Performance Metrics and Targets

With some exceptions, the metrics included in Table B-2 are the Department's secondary metrics to measure progress towards achieving the corrective measure end state. These end states goals may change as more information becomes available. This will not detract from their intended purpose; namely, to monitor progress of the corrective measure. In that context, they will not necessarily be used to gauge improvements in contract and project management. The lack of achievement of these goals should not and will not detract from the ultimate benchmark of project success. They will serve as management indicators and help focus management's attention and resources, as appropriate.

³ The EM Cleanup Project performance metric will be reviewed within two years and revised to be more consistent with the Capital Asset Line Item Project performance metric, if appropriate.

⁴ The three-year rolling average will be established in FY 2010 (the first three-year's worth of data will be available) in concert with revising the EM Cleanup Project performance metric.

⁵ Cost reimbursable capital asset projects (greater than \$20 million) and cost reimbursable EM cleanup projects currently use EVM systems no later than CD-3. The focus of this metric is to certify the EVM systems being used in accordance with ANSI/EIA-Standard-748. The Department currently uses EVM systems on 100% of their cost contracts. This metric is focused on certifying these EVM systems. These goals are based on a projected increase in EVM system certification funding.

Table B-2 – Corrective Measure Performance Metrics and Targets

Contract/Project Management Performance Metrics	FY 2008	FY 2009 Target	FY 2010 Target	FY 2011 Target	FY 2012 Target	FY 2013 Target
Corrective Measure 1: By the end of FY 2011, 80% of projects (greater than \$100 million) will use PDRI methodologies no later than CD-2.	Establish Baseline	50%	65%	80%	-	-
Corrective Measure 1: By the end of FY 2011, all projects (greater than \$750 million [i.e., Major System Projects]) applying new technology, as appropriate, will implement technology readiness assessment methodologies no later than CD-2.	Establish Baseline	50%	70%	80%	-	-
Corrective Measure 2: By the end of FY 2011, federal contract and project management positions (based on new model) are staffed at 80% of the desired level. ⁶	Start New Staffing Model	50%	65%	80%	-	-
Corrective Measure 2: By the end of FY 2011, 95% of projects have certified FPDs no later than CD-1.	85%	90%	93%	95%	-	-
Corrective Measure 2: By the end of FY 2011, 90% of projects have FPDs certified <u>at the appropriate level</u> assigned to projects no later than CD-3.	80%	85%	88%	90%	-	-
Corrective Measure 2: By the end of FY 2011, 85% of the 1102 contracting series will be certified.	78% ⁷	80%	83%	85% ⁸	-	-
Corrective Measure 3: By the end of FY 2011, for all capital asset line item projects that are completed at CD-4, 50% are completed below their currently approved TPC with some contingency and/or management reserve remaining.	Establish Baseline	25%	40%	50%	-	-
Corrective Measure 4: By the end of FY 2013, 80% of capital asset line item projects (less than \$50 million) are fully funded in one Fiscal Year (one Appropriation). ⁹	N/A	N/A	N/A	80% of Projects <\$20M	80% of Projects <\$35M	80% of Projects <\$50M
Corrective Measure 5: By the end of FY 2010, establish and staff (at 80% of authorized FTEs) a cost estimating and analysis organization in the Chief Financial Officer, Office of Cost Analysis (CF-70) organization.	20%	50%	80%	-	-	-

⁶ Staffing contract and project management positions requires personnel with the required training and certification. The 80% staffing goal takes into consideration competing private sector employment opportunities and the remote geography of several DOE locations.

⁷ During FY 2008, DOE transitioned from the DOE Acquisition Career Development Program to the Government-wide Federal Acquisition Certification—Contracting (FAC-C). The transition to the new FAC-C is reflected in the FY 2008 target.

⁸ The percentage of certified 1102 series employees fluctuates significantly with changes in personnel due to the normal and expected cycles in attrition and hiring. It is also dependent on the actual level of funding made available for training. In FY 2011, the target will be reevaluated for possible increase in FY 2012 and beyond. We understand that 85% is the recognized target for DoD acquisition workforce certification and believe that it is an appropriate target for the DOE acquisition program. DOE's Acquisition Career Management Program was modeled after the DoD/DAWIA program.

⁹ This is a proposed metric based on a new established policy, if instituted.

Table B-2 – Corrective Measure Performance Metrics and Targets

Contract/Project Management Performance Metrics	FY 2008	FY 2009 Target	FY 2010 Target	FY 2011 Target	FY 2012 Target	FY 2013 Target
Corrective Measure 5: By the end of FY 2011, 80% of contract awards are within plus or minus 25% of independent government cost estimates.	Establish Baseline	70%	75%	80%	-	-
Corrective Measure 6: By the end of FY 2011, achieve a contract specialist to contract value ratio of 1 per \$X* million or less. * The staffing study will establish the appropriate benchmark factor “X” to be applied.	start staffing study	1 per \$2.0XM or less	1 per \$1.5XM or less	1 per \$XM or less	-	-
Corrective Measure 7: By the end of FY 2012, achieve a FPD (including Deputy FPD(s), as applicable) to annual work in place ratio of 1 per \$X* million or less, and/or in accordance with the staffing study. * The staffing study will establish the appropriate benchmark factor “X” to be applied.	start staffing study	1 per \$2.5XM or less	1 per \$2.0XM or less	1 per \$1.5XM or less	1 per \$XM or less	-
Corrective Measure 7: For projects post CD-3, by the end of FY 2011 and FY 2012, 95% of cost reimbursable capital asset line item projects (greater than \$20 million) and cost reimbursable EM cleanup projects, respectively, use certified EVM systems.	65% Line Item 55% EM	85% Line Item 65% EM	90% Line Item 75% EM	95% Line Item 85% EM	- 95% EM	-
Corrective Measure 7: By the end of FY 2011, on a program portfolio basis, 90% of all projects will meet the project schedule metric that follows: from CD-3 to CD-4, for projects less than five years in duration, they will be completed within 12 months of the original CD-3/4 duration. ¹⁰	75%	80%	85%	90%	-	-
Corrective Measure 7: By the end of FY 2011, on a program portfolio basis, 90% of all projects will meet the project schedule metric that follows: from CD-3 to CD-4, for projects greater than five years in duration, they will be completed within 20% of the original CD-3/4 duration. ¹⁰	75%	80%	85%	90%	-	-
Corrective Measure 8: By the end of FY 2011, 95% of projects have certified FPDs no later than CD-1.	85%	90%	93%	95%	-	-

¹⁰ The project schedule metric will be revisited within two years and revised, as appropriate. In the case of CD-3, for actions that have been tailored (i.e., CD-3A, CD-3B, etc.), the duration clock starts at the first increment (i.e., CD-3A). This metric will be based on a three-year rolling timeline of projects reaching CD-4. The FY 2008 target is based on projects reaching CD-4 in the FY 2006 – 2008 timeframe.

Table B-2 – Corrective Measure Performance Metrics and Targets

Contract/Project Management Performance Metrics	FY 2008	FY 2009 Target	FY 2010 Target	FY 2011 Target	FY 2012 Target	FY 2013 Target
Corrective Measure 8: By the end of FY 2011, 90% of projects have FPDs certified at the appropriate level assigned to projects no later than CD-3.	80%	85%	88%	90%	-	-
Corrective Measure 8: For projects post CD-3, by the end of FY 2011 and FY 2012, 95% of cost reimbursable capital asset line item projects (greater than \$20 million) and cost reimbursable EM cleanup projects, respectively, use certified EVM systems.	65% Line Item 55% EM	85% Line Item 65% EM	90% Line Item 75% EM	95% Line Item 85% EM	- 95% EM	- -

VIII. Major Initiatives:

To improve contract and project management, the Department will take the following actions associated with each corrective measure.

1. Establish and implement measures to ensure adequate project requirements definition is accomplished before a project performance baseline is established. This would include defining planning benchmarks, ensuring adequate resource allocation, and conducting third-party reviews prior to project approval, additional funding authorization, and project execution.

Plan of Action	Start	Finish	Status
Develop tailored Prototype Project Definition Rating Index (PDRI) applications	6/9/08	2/13/09	
Pilot prototype PDRIIs	2/16/09	6/19/09	
Develop final PDRI applications	6/22/09	10/23/09	
Integrate PDRI with Energy Systems Acquisition Advisory Board (ESAAB) process	10/26/09	1/15/10	
Develop and conduct PDRI training	10/26/09	7/2/10	
Develop DOE-wide technology readiness level (TRL) model	6/9/08	11/21/08	
Pilot TRL applications	11/24/08	3/27/09	
Revise TRL model	3/30/09	6/19/09	
Integrate TRL with ESAAB process	6/22/09	9/11/09	
Develop and conduct TRL training	9/14/09	2/26/10	
Provide input for DOE O 413.3 revision	10/26/09	5/21/10	

2. Develop and implement a comprehensive federal staffing plan, with an associated resource plan, to recruit, develop, and retain the optimum contract and project management federal workforce.

Plan of Action	Start	Finish	Status
Develop communications strategy	6/16/08	12/31/08	
Review existing documents, benchmark, compile gap analysis	6/30/08	10/6/08	
Develop staffing model	9/15/08	10/20/08	
Develop high-level policy strategies for acquisition, retention and training of personnel	8/18/08	10/1/08	
Develop resourcing alternatives	10/20/08	12/29/08	
Refine metrics and plan of measurement	11/24/08	12/29/08	

3. Establish objective, uniform methods for assessing, communicating, and managing project risks and uncertainties. This would include the development of realistic budgets and schedules, and the consistent definition, development, and use of management reserve and contingency.

Plan of Action	Start	Finish	Status
Complete risk guidance	1/5/09	7/3/09	
Make available Risk Management tools	2/5/09	9/4/09	
Review/evaluate current practices. Identify gaps/issues in processes.	2/5/09	7/4/09	
Develop risk analysis and management standards.	5/5/09	8/4/09	
Review and revise risk training curriculum.	6/5/09	9/4/09	

4. Improve the alignment and integration of cost baselines with budget funding profiles to account for federal budget fiscal realities and to ensure uninterrupted project execution. Enhance project and program prioritization and associated resource allocation to minimize negative impacts to the performance baseline.

Plan of Action	Start	Finish	Status
Establish policy and procedures for improved incremental funding profiles and full funding for smaller projects	7/15/08	9/15/08	
Develop funding policy recommendation for next revision of DOE O 413.3A	8/1/08	10/31/08	
Establish consistent protocol for the definition, development, funding, and use of management reserve and contingency as a key part of the policy and guidance on project cost estimation	1/2/09	2/27/09	
Analyze impacts of Continuing Resolution and incremental funding to determine possible cost savings.	1/2/09	2/27/09	
Develop new policy that balances the impact of forward funding and the impact of unobligated balances	2/2/09	3/31/09	
Add assessment of project affordability in baseline validation/approval	9/1/08	12/20/08	

Plan of Action	Start	Finish	Status
Propose process improvement for strengthening project funding discipline	3/2/09	4/30/09	
Incorporate funding policy in budget guidance	7/15/08	12/20/08	

5. Establish and implement a federal independent government cost estimating capability, including the development of appropriate policy and standards, allocation of required resources, and compilation of unit cost labor and material databases.

Plan of Action	Start	Finish	Status
Develop CF-70 staffing plan	6/30/08	9/30/08	
Establish Cost Estimating order and manual	7/1/08	12/2/08	
Improve cost estimating training	12/3/08	6/1/09	
Develop initial cost estimating database	7/1/08	6/1/09	
Complete first independent cost review	6/1/08	2/28/09	
Perform at least four cost estimating reviews and independent government estimates	6/1/08	12/2/09	

6. Strengthen the commitment to federal ownership by aligning and integrating acquisition strategies and acquisition plans, and project plans; clearly define roles and responsibilities, enhance integrated project teams participation, and ensure accountability for ownership and integration.

Plan of Action	Start	Finish	Status
Review existing directives, policy, guidance	1/12/09	2/13/09	
Review training requirements of FPDs and CORs	2/16/09	3/20/09	
Perform a process flow analysis to integrate project management with contract management	3/23/09	4/24/09	
Perform a benchmark analysis on other Federal agencies	4/27/09	5/15/09	
Review and assess output from Corrective Measures 1 – 3	5/18/09	6/5/09	
Perform gap analysis	6/8/09	6/26/09	
Recommend specific actions	6/29/09	7/10/09	
Incorporate approved recommendations	7/13/09	9/11/09	

7. Identify and implement opportunities to improve the management and oversight of projects; clarify federal project management roles, responsibilities, and authorities; establish a project oversight benchmark; and align the program and project organizational structures.

Plan of Action	Start	Finish	Status
Review current directives, orders, guides	7/6/09	8/14/09	
Benchmark other agencies (organizational structure, roles and responsibilities)	8/17/09	11/6/09	
Benchmark private sector	11/9/09	1/8/10	
Perform gap analysis	1/11/10	3/12/10	
Procure Project Assessment and Reporting System (PARS) 2	7/6/09	2/12/10	

Plan of Action	Start	Finish	Status
Pilot PARS 2	2/15/10	8/16/10	
Strengthen contractor accountability with new award fee protocol	3/15/10	2/11/11	
Full deployment of PARS 2	8/17/10	4/25/11	

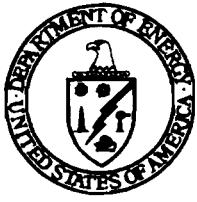
8. Re-evaluate program and project management policy, guidance, and standards for alignment and consistency. Establish measures and procedures to ensure that all project management requirements are clearly documented and followed and responsible personnel are held accountable.

Plan of Action	Start	Finish	Status
Establish a project management policy, guidance, and standards directory on OECM website	11/1/08	4/1/09	
Develop checklist and/or flowcharts for all project management phases	12/1/08	6/1/09	
Identify best management practices	12/1/08	6/1/09	
Define and document roles, responsibilities, and authorities for project management personnel	6/1/09	11/6/09	
Develop draft A update of DOE Order 413.3	12/1/08	12/1/09	
Develop draft B update of DOE Order 413.3	1/1/10	4/1/10	
Issue update of DOE Order 413.3	4/1/10	9/30/10	

IX. Methodology for Evaluation:

The Director of the Office of Engineering and Construction Management is responsible for measuring and reporting the validity of data for each corrective measure and for tracking progress. The DOE organizational sponsor will provide quarterly updates to the Executive Steering Committee, and OECM will facilitate semi-annual and quarterly reviews with external stakeholders (GAO and OMB) as requested.

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The Secretary of Energy
Washington, DC 20585

April 7, 2008

MEMORANDUM FOR HEADS OF DEPARTMENTAL ELEMENTS

FROM: SAMUEL W. BODMAN 
SUBJECT: Improving Contract and Project Management

Improving the Department of Energy's project and contract management continues to be one of my major management priorities. Excellence in this area helps ensure that DOE's programs and projects meet DOE's strategic objectives, provide value to the American taxpayer, and foster public confidence in DOE's ability to manage its responsibilities.

As part of our effort to build a strong project and contract management foundation, I established under the direction of the Deputy Secretary, a senior leadership team to conduct an in-depth root cause analysis of the underlying issues that have stymied DOE's past efforts to become a leader in this area. I am pleased to announce today that the senior leadership team has delivered to me the Department of Energy Root Cause Analysis Report (RCA). I have reviewed the RCA and accept and fully endorse the conclusions and recommendations embodied in it. A copy of the RCA is attached, and it can be viewed electronically at <http://management.energy.gov>.

The RCA was developed through extensive collaboration between DOE's Headquarters and field project, contract, and financial management professionals, and in coordination with the Office of Management and Budget and the Government Accountability Office. The Root Cause Analysis identified the key elements necessary to make the meaningful changes required to consistently deliver projects within cost and schedule performance parameters; disciplined upfront planning; realistic estimates of cost and schedule; and straight forward communication between the project director and senior management.

In addition, the team is to develop a Corrective Action Plan (CAP) to ensure that DOE's efforts to improve will be focused on addressing the root causes with meaningful and lasting solutions, ensure senior leadership ownership, and provide demonstrable results. That product is currently under development, and I look forward to receiving it in the very near future.

I remain strongly committed to real and tangible improvement in DOE's project and contract performance. My endorsement of the RCA today signifies that commitment to pursue those initiatives and actions which, when implemented, will help to resolve the contract and project management issues and root causes which have challenged DOE for years. My expectation is that you, as a senior leader of this Department, will fully embrace the RCA's conclusions and recommendations and commit your organization's resources in bringing about the needed changes as ultimately reflected in the CAP. Your personal commitment and the active participation of your headquarters and field organizations are critical to our success.

Attachment



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ROOT CAUSE ANALYSIS

CONTRACT AND PROJECT MANAGEMENT

APRIL 2008



U.S. DEPARTMENT OF
ENERGY

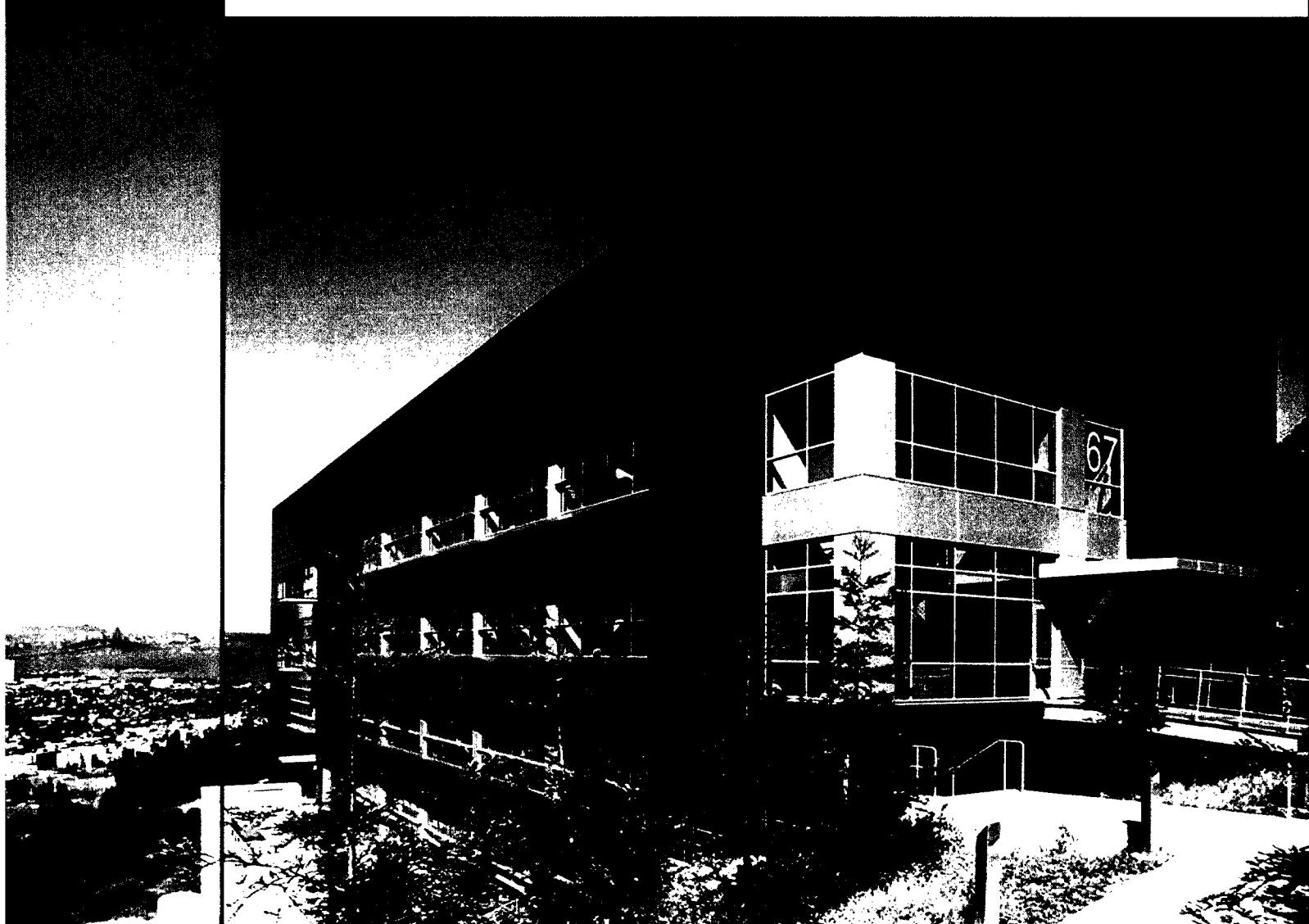
Cover Photo:

Winner of the “DOE 2007 Excellence Award in Project Management,”
Office of Science’s Lawrence Berkeley National Laboratory, “Molecular Foundry Project”;
an \$85 million LEED “Gold” certified facility completed within cost and schedule.

ROOT CAUSE ANALYSIS

CONTRACT AND PROJECT MANAGEMENT

APRIL 2008



U.S. DEPARTMENT OF
ENERGY



Root Cause Analysis: Contract and Project Management

APRIL 2008

Executive Summary

The U.S. Department of Energy (hereafter referred to as DOE or the Department and inclusive of the National Nuclear Security Administration) dedicates substantial resources to managing and operating its complex of sites and laboratories. DOE sites and laboratories perform critical missions that include maintaining the nuclear weapons stockpile, cleaning up radioactive and hazardous waste resulting from the legacy of the Manhattan project, and conducting some of the world's most sophisticated basic and applied energy and scientific research activities. To conduct these missions, the Department has established some of the largest, most complex projects in either the public or private sector.

Over the past three decades, the Department has successfully delivered many of its capital asset projects on time and within budget; however, far too many have breached their performance baselines. This has harmed the Department's credibility and eroded support on Capital Hill. These ongoing challenges have prompted the Government Accountability Office (GAO) to include "DOE Contract (Project Management" on their High Risk List since 1990.

Substantial contract and project management enhancements and reforms have been implemented, resulting in improved project execution and performance. During FY05–07, 70 percent of DOE projects were completed in accordance with our performance goals of completing projects within the original performance baseline with no more than 10 percent cost growth. While not all of these recently completed projects were the most complex or presented the highest risk, they demonstrate dramatic improvement from early years, while acknowledging further challenges remain.

While the Department takes pride in its recent accomplishments, significant opportunities remain for further improvement in the areas of contract and project management. In order to assess the underlying causes for past challenges, a root cause analysis was conducted to identify significant contract and project management deficiencies and to subsequently develop a strategy to make the culture changes required to allow DOE to attack these deficiencies head-on. While the emphasis of this report is directed at capital line item projects, several of the issues identified are also applicable to other projects, such as major items of equipment projects and Office of Environmental Management cleanup projects.

A root cause analysis workshop was conducted on October 16–17, 2007, to identify and review the systemic challenges of planning and managing DOE projects. In preparation for this workshop, a thorough document review was conducted to highlight the significant issues and themes identified in previous reviews, including past studies of DOE contract and project management conducted by the United States Government Accountability Office (GAO), the National Research Council (NRC), and the DOE Inspector General (DOE IG). Appendix A details the 43 documents included in this review.

After compiling a list of 143 issues, the workshop attendees consolidated and prioritized them into a shorter list of 60 issues. The top 10 issues are listed below. These are the issues that when properly addressed will have a positive impact on all of the identified contract and project management issues.

1. DOE often does not complete front-end planning (project requirements definition) to an appropriate level before establishing project baselines.
2. DOE does not have an adequate number of federal contracting and project personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical expertise) to plan, direct, and oversee project execution.
3. Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.
4. Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.
5. Contracts for projects are too often awarded prior to the development of an adequate independent government estimate.
6. DOE’s acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.
7. DOE’s organizational structure is not optimized for managing projects.
8. DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.
9. Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.

10. DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.

Then a “Five-Whys” root cause analysis methodology was used to identify the project management and contract management deficiency root causes. The “Five-Whys” is a question-asking method used to explore the cause and effect relationships underlying a particular problem. Ultimately, the goal of applying the “Five-Whys” method is to determine the root cause(s) of a problem.

Outlined below are the primary causes that impact the Department’s ability to consistently deliver capital asset projects on time and within budget. It should be noted that not all of the root causes apply to all DOE projects all of the time. However, when they do occur, some of the root causes are found to be prevalent within several projects leading to recurring project management and contract management deficiencies. Taken with the resulting contract and project management issues and recurring shortcomings in planning, oversight, organization, and resources, these root causes emanate from an ingrained culture of weak federal ownership of projects, including associated contracts, from inception through execution to completion. These are the root causes that must be addressed to bring about significant and lasting solutions to the Department’s contract and project management challenges:

- ◆ Insufficient number of personnel assigned to contract and project management functions
- ◆ Some personnel lack the appropriate skills to carry out all required contract and project management functions
- ◆ Lack of alignment between contract and project management authority, accountability, and responsibility
- ◆ Lack of effective contract and project management integration between line and staff organizations at headquarters, between the field and headquarters, and between contract and project management personnel
- ◆ Insufficient budget resources allocated to contract and project management
- ◆ Ineffective project and program prioritization and resource allocation negatively impacting portfolio, program, and project management
- ◆ Inadequate training for some specific areas of need in contract and project management
- ◆ Lack of defined benchmarks in specific contract and project management areas

This root cause analysis provides a foundation for identifying and implementing corrective measures that will result in significant, measurable, and sustainable improvements in the Department's contract and project management performance and culture. A separate Corrective Action Plan (CAP) will follow this root cause analysis and be implemented to effect the required culture change.

Achieving excellence in contract and project management remains a top Departmental priority. A strong Department-wide focus, sustained leadership, and progress to make DOE the model for Federal contract and project management will anchor the Department in this endeavor. Ultimately, the consistent completion of projects on time and within budget is the benchmark and the metric to demonstrate success.

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Chapter 1

Introduction

1.1 BACKGROUND

The Department of Energy's portfolio of contracts and projects demands a sophisticated and flexible structure that can manage contract and project risks systematically; control cost, schedule, and scope baselines; acquire, develop, and retain contract and project management personnel; optimize use of available resources; and transfer new technologies and management practices efficiently between projects.

This portfolio of projects is large, complex, and technically challenging. Many are unique, one-of-a-kind initiatives that involve cutting-edge technology. The project portfolio represents the diverse nature of DOE missions, encompassing energy systems and research, nuclear weapons development and stewardship, environmental restoration, contaminated and complex facility deactivation and decommissioning, waste management, and basic and applied energy and scientific research activities. Few other government or private sector organizations are challenged by projects of a similar magnitude, diversity, and complexity. To complete these complex projects on schedule, within budget, and in scope, the Department must employ highly developed project management capabilities, processes, and procedures.

The Department has had many project successes over the years, but also some significant cost and schedule overruns. Due to the nature of the projects and past problems, GAO has included "DOE Contract (Project) Management" on their High Risk List since 1990. The deficiencies noted within their reports include both inadequate management and oversight of contractors and failure to hold contractors accountable. Numerous other reports, some of which are included in Appendix A, have further delineated the Department's project challenges.

The Department has taken significant steps to improve contract and project management. Over the years, a number of key actions have been implemented to improve contract and project management including the following:

- ◆ Established the Office of Engineering and Construction Management and the project management support offices in the National Nuclear Security Administration (NNSA), the Office of Environmental Management (EM), and the Office of Science (SC) to ensure consistent policy, procedures, and oversight;

- ◆ Established rigorous project management procedures by issuing DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets, along with subsequent revision and development of 18 associated Guides;
- ◆ Implemented a Project Assessment and Reporting System (PARS) to keep leadership aware of project status and to effect appropriate corrective actions in a timely manner;
- ◆ Established requirements for, and certification of, contractor's Earned Value Management Systems (EVMS) and EVMS training of all Federal Project Directors and Contracting Officers to ensure the accuracy of critical project management data and better enable its use;
- ◆ Established a comprehensive External Independent Review (EIR) process to validate and recommend approval of proposed project performance baselines prior to construction capital asset budget requests;
- ◆ Established the Project Management Career Development Program (PMCDP), the Federal Project Director Certification Program, the Acquisition Career Development (ACD) Program, and the Acquisition Professional Certification requirements to enhance the training and qualifications of contract and project management personnel;
- ◆ Implemented enhanced Internal Project Reviews (IPRs) and Technical IPRs to better monitor project development and execution;
- ◆ Enhanced use of project management tools and techniques, including the Project Definition Rating Index (or DOE versions with comparable content) for improved management decision-making;
- ◆ Established the Contract Administration Division to identify and resolve systemic issues in the management of our contracts;
- ◆ Established guidance, training, and performance measures to increase the quality and level of performance-based contracting;
- ◆ Implemented the requirement for integrated contract management strategies in the form of Contract Management Plans;
- ◆ Performed a reengineering assessment of our contract preparation and award processes, including recommendations for improvement;
- ◆ Initiated EM best-in-class program for contracting and project management to identify and implement improvements;

There is recognition that there are additional opportunities for improvement. The Department has established a minimum benchmark for success and that

benchmark has not yet been achieved. This root cause analysis (RCA) is intended to identify the current reasons for continued shortcomings and to develop corrective measures aimed at improving performance.

1.2 CURRENT DOE SITUATION

The Department continues to rely predominantly on contractors to operate the laboratories and sites and to carry out diverse missions, including developing, maintaining, and securing the nation's nuclear weapons capability; cleaning up the radioactive and hazardous wastes resulting from more than 50 years of weapons production; and conducting basic and applied energy and scientific research activities. This mission work is carried out primarily under the direction of NNSA and the Offices of Environmental Management and Science.

In FY 2007, approximately 11,000 Federal personnel (excluding 4,000 employees working for the four Power Marketing Administrations) were employed by the Department. The estimated contractor population numbered approximately 93,500 personnel. A small subset of the civil servants provided direct oversight for capital asset project work and environmental clean up performed under contract. The M&O (Management and Operating) contractors generally carried out the Department's missions by managing projects and operating facilities. This has been the business model used by the agency for decades.

Today's projects include efforts such as construction of multi-billion dollar facilities to treat radioactive and hazardous wastes, construction of accelerators and nuclear material chemical processing plants, decontamination, and demolition of excess facilities, as well as nearly 50 on-going capital asset projects with established performance baselines estimated at approximately \$30 billion and EM clean-up projects valued in the tens of billions.

Multiple offices are responsible for various aspects of contract and project management. The DOE Office of Engineering and Construction Management (OECM) is responsible for establishing policies and guidance for planning and managing projects. The DOE Office of Procurement and Assistance Management and NNSA Office of Acquisition and Supply Management establish policies and guidance for awarding and administering contracts. Each of the eight Departmental Programs, such as NNSA and the Offices of Environmental Management and Science, have representatives responsible for providing oversight to ensure that contractors are appropriately managing projects to support the DOE missions.

In addition to OECM providing oversight of project management policies and procedures, the Department's three largest program elements—NNSA and the Offices of Environmental Management and Science—have established project management support offices within their respective organizations. These project management support offices coordinate efforts within the program, provide additional oversight of projects, and conduct internal reviews of individual projects.

The very nature of this business requires excellence in the execution of relatively straightforward office building projects to large, complex projects as a core competency. Improvements in contract and project management have been made and these have resulted in improved project execution performance. Within the past several years, various reports noted that less than 50 percent of our projects were being executed within the original cost estimates. In the last 3 years (FY05–07), a total of 33 capital asset projects have been completed and of these, 23 were completed within the original approved CD-2 scope and at a total cost within 10 percent of the approved cost baseline. This represents a 70 percent success rate; the trending line is moving in the right direction.

Despite the most recent project performance improvement trends, the Department's performance goals have not yet been achieved. Challenges continue predominately in the areas of inadequate up-front planning, human capital, organizational alignment, and inadequate oversight of our projects. Too often original project performance baselines are breached, and, at times, they are breached by significant amounts.

This RCA will serve as a foundational document for contract and project management performance improvement. It is a reassessment of what issues and underlying root causes remain that negatively impact project performance. The issues and underlying root causes must be addressed to make significant strides for achieving and maintaining the Department's project and portfolio performance goals.

1.3

PERFORMANCE GOALS

The Department has established performance goals for capital line item and EM cleanup projects. Our capital asset goals are consistent with OMB Circular A-11 and the Capital Planning Guide. These performance goals constitute our definition of success for capital asset construction and cleanup projects.

- ◆ Capital Asset Line Item Projects: Capital asset line item projects will be completed within the original approved scope baseline (Critical Decision 2) and within 10 percent of the original approved cost baseline at Critical Decision 4 (project completion), unless otherwise impacted by a directed change.¹ On a project portfolio basis, 90 percent of DOE line item projects will meet the project success definition benchmark.
- ◆ EM Cleanup (Soil and Groundwater Remediation, D&D, and Waste Treatment and Disposal) Projects: EM cleanup projects will be completed by achieving at least 80 percent of the defined (near-term baseline) end-state scope and with less than a 25 percent cost variance from the original approved baseline, unless impacted by a directed change. On a project

¹ Directed Change: Changes caused by DOE Policy Directive, Regulatory, or Statutory action.

portfolio basis, 90 percent of DOE operating projects will meet the project success definition benchmark.

These are the benchmarks that will be used to define, track, and measure project success over time. The difference in performance benchmarks reflects the inherent differences in the planning and execution of different types of projects, in this case, the differences between capital asset construction projects versus EM Cleanup. In many instances, it is harder to clearly define up-front requirements for EM Cleanup projects (as is the case for Soil and Groundwater Remediation, for example) and, in most cases, they operate in different regulatory and funding environments with different stakeholder pressures.

In addition, there is recognition that despite the best planning efforts, world events and shifting Presidential and/or Congressional budget priorities could negatively impact project funding profiles over time, resulting in project schedule delays and cost growth. Actions such as these could result in performance baseline changes. In those instances, the original performance baselines will be readjusted and project success measured against those revised baselines.

By addressing the root causes of past contract and project management deficiencies and effecting the appropriate solutions, the probability of project and portfolio success will be increased.

1.4 ROOT CAUSE ANALYSIS OBJECTIVES

The overall objective of this analysis was to identify and define the root causes impeding improved contract and project management performance. The specific objectives were:

- ◆ To identify a comprehensive list of departmental issues and the root causes that negatively impact contract and project management.
- ◆ To provide a basis for developing recommended solutions that address the identified root causes and issues and mitigate or eliminate any negative impacts to contract and project management performance.

1.5 APPROACH AND METHODOLOGY

The approach for conducting the contract and project management RCA involved collecting data through document reviews and personnel interviews and then analyzing the issues and identifying root causes during a 2-day workshop. Workshop attendees included nearly 70 DOE contract and project management personnel from the headquarters, sites, and laboratories, including federal project directors.

The methodology used to perform the contract and project management RCA included the following steps.

- ◆ **Step 1—Define the Problem.** Despite improvements in contract and project management, the Department’s performance in completing projects within cost and schedule baselines continues to be inconsistent. Most recent project performance continues to fall short of project performance goals as a result of impediments and challenges to managing contracts and projects.
- ◆ **Step 2—Gather Data and Evidence.** Data were gathered to document past shortcomings in performance. These data were predominantly gathered from reviewing documented GAO, NRC, and DOE IG reports that specifically addressed the Department’s contract and project management. The significance and value of the findings in many of these reports were still germane. They were reviewed for continued applicability. The findings from these reports were validated and supplemented with interviews of people directly responsible for, and closely familiar with, DOE contract and project management.
- ◆ **Step 3—Identify Issues that Contribute to the Problem.** On the basis of the data gathered and reviewed through document reviews and interviews, workshop participants identified the most significant contract and project management issues that continue to plague project performance. While no empirical evidence was able to delineate how each issue impacted each project, there was broad acknowledgement that addressing the identified issues would improve project performance. There was also general agreement that while the issues identified were present in some contracts and projects, they were not necessarily representative of all Departmental contract and project management activities.
- ◆ **Step 4—Find the Root Causes.** Once the common issues negatively affecting our contract and project management performance were established, a more thorough review of the top issues was undertaken to determine the reasons why they continue. The RCA methodology commonly referred to as the “Five-Whys” procedure was used.² During the workshop, individuals knowledgeable of, and directly responsible for, managing DOE contracts and projects identified probable root causes through this challenging series of questions as to “why” the situation, event, or condition associated with each of the identified issues existed. The responses were structured to establish root causes.
- ◆ **Step 5—Develop Recommended Solutions.** Upon determining the underlying root causes for contract and project management shortcomings, a se-

² Masaaki Imai first used the Five Whys procedure for trouble shooting problems relative to the Toyota Production System in the 1970s. It is a common RCA methodology used today and most useful in conference environments. It involves taking any issue and asking “Why”, what caused the problem? When the cause is understood, the question is asked again. Generally, it has been acknowledged that it takes asking the question five times before the root causes begin to appear.

ries of recommended solutions will be developed in the form of corrective measures aimed at resolving the contract and project management issues and root causes. The focus will be on properly addressing the critical few having the biggest impact, which will have a positive impact on all of the identified contract and project management issues. To establish ownership and ensure successful implementation, future corrective measures will be developed with broad input and support from people across the Department.

- ◆ **Step 6—Establish Milestones and Performance Measures.** Each of the corrective measures will include discrete milestones and performance measures. These milestones and performance measures will be used to evaluate implementation of the corrective action plan as well as the overall contract and project management performance in accordance with our established project performance goals.
- ◆ **Step 7—Implement Recommended Solutions.** Each corrective measure will be included in a comprehensive and integrated corrective action plan. The implementation of specific corrective measures will be evaluated and reported on a periodic basis.
- ◆ **Step 8—Observe and Measure Performance for Desired Outcome.** Ensure the commitment and allocation of the necessary resources to continually measure performance against our performance goals.

The contents of this report represent completed activity through the first four steps. Subsequent efforts will include the development and implementation of corrective actions and the measurement of their effectiveness.

Chapter 2

Data Collection and Findings

2.1 DOCUMENT REVIEWS AND INTERVIEWS

Over the years, there have been many external reports and studies focused on DOE contract and project management challenges. Some of these reports and studies highlighted the root causes of these challenges. The value and importance of past findings and recommendations addressed in previous studies on DOE contract and project management remain germane. Accordingly, relevant reports authored by GAO, NRC, and others, as well as internal reports issued by the DOE Inspector General were reviewed. A total of 43 documents were reviewed and are included in Appendix A. Key issues that impact our contract and project management performance were identified. Thereafter, a comprehensive list of potential current issues that continue to impede Departmental contract and project management performance was compiled.

In addition, a series of interviews were conducted with more than 40 people to validate past findings and to identify any additional contract and project management performance issues that may not have been identified through our document reviews. In addition to interviewing DOE headquarters and field personnel directly responsible for managing contracts and projects, OMB representatives, knowledgeable about DOE and NNSA projects, were also interviewed. In most cases, these interviews did not identify any new issues; however, they did confirm the continued presence of previously identified and documented issues.

2.2 ROOT CAUSE ANALYSIS WORKSHOP

A root cause analysis workshop was conducted on October 16–17, 2007, to discuss the challenges of planning and managing DOE projects, including the major issues and associated root causes impacting cost and schedule performance. Approximately 70 DOE federal employees were in attendance.

Numerous teams were assembled during the workshop to review, revise, merge, delete, and/or validate the previously defined 143 issues as well as identify additional new issues impacting contract and project management. Team composition included headquarters and the field personnel, including representative federal project directors (FPDs), from NNSA, the Offices of Environmental Management and Science, other DOE staff functions, and OMB. The teams ultimately briefed their results to all the attendees to solicit input, discuss the issues, and finalize issue consolidation. The result included a total of 60 issues, which were then prioritized.

Workshop attendees independently ranked their top 10 issues according to what they believed to be the relative significance impacting contract and project management performance. Each participant was provided 10 numerical votes numbered 1 through 10, with 10 being the most important. The rankings from each participant were then consolidated to establish a relative prioritization of all 60 issues.

The resulting top 10 contract and project management issues identified by the workshop participants are outlined below. The total numerical score and number of personnel that actually used one of their votes for the issue are included in parentheses. For example, for “Issue 1” below, the parenthetical representation of “430 and 68”, means that “Issue 1” received a “430” score (derived by adding each person’s vote (either a “10”, a “1”, or any number within that range)), and that “68” people actually used one of their ten votes for “Issue 1”. Each attendee could only assign one of their numerical votes to one issue. The results follow:

1. DOE often does not complete front-end planning (to include project requirements definition) to an appropriate level before establishing project baselines. (430 and 68)
2. DOE does not have an adequate number of federal contracting and project personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical expertise) to plan, direct, and oversee project execution. (270 and 42)
3. Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution. (230 and 40)
4. Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure. (130 and 24)
5. Contracts for projects are too often awarded prior to the development of an adequate independent government estimate. (105 and 22)
6. DOE’s acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well. (99 and 14)
7. DOE’s organizational structure is not optimized for managing projects. (77 and 12)
8. DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance. (77 and 12)

9. Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner. (75 and 14)
10. DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors. (72 and 11).

Appendix B includes the prioritized list of the top 10 issues with further details. A quick comparison between “Issue 1” and “Issue 10” is revealing; 68 workshop attendees voted for Issue 1 and only 11 voted for Issue 10. The drop off is more dramatic beyond Issue 10. From the results of the voting, these top 10 issues clearly floated to the top and garnered maximum attention in the development of the root causes. These are the issues that when properly addressed will have a positive impact on all of the identified contract and project management issues.

2.3 CONTRACT AND PROJECT MANAGEMENT ROOT CAUSES

After consolidating and prioritizing the issues, the most significant issues impeding performance were further evaluated to identify root causes. The purpose of the RCA was to identify the underlying causes that, when corrected, will preclude or minimize the recurrence of contract and project management deficiencies in the future. As discussed earlier, the RCA utilized the “Five-Whys” methodology.

Figure 2-1 below summarizes and presents the top ten 10 issues along with the results of the root cause analysis. Taken in context with the resulting contract and project management issues and recurring shortcomings related to planning, oversight, organization, and resources, these root causes emanate from an ingrained culture of weak federal ownership of projects, including associated contract mechanisms, from inception through execution to completion.

Figure 2-1 Summary of Top 10 Contract and Project Management Issues and Associated Root Causes

Top 10 DOE Contract and Project Management Issues	Root Causes
1. DOE often does not complete front-end planning to an appropriate level before establishing project performance baselines.	<ul style="list-style-type: none"> ▪ Insufficient number of people ▪ Inadequate skilled personnel ▪ Inadequate time ▪ Reliance on the M&O contractor ▪ Lack of a benchmark ▪ Ineffective interdepartmental integration ▪ Limited planning budget resources
2. DOE does not have an adequate number of federal contracting and project management personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management, and technical) to plan, direct, and oversee project execution.	<ul style="list-style-type: none"> ▪ Insufficient budget resources ▪ Conflicting and competing priorities ▪ Inferior Federal government compensation compared to the private sector ▪ Inadequate roles and responsibilities definition ▪ Inadequate training

Top 10 DOE Contract and Project Management Issues	Root Causes
3. Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.	<ul style="list-style-type: none"> ▪ Insufficient number of staff ▪ Inadequate training ▪ Lack of management emphasis and direction ▪ Lack of recognition of the required number of personnel and the necessary skills needed
4. Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.	<ul style="list-style-type: none"> ▪ Suboptimum portfolio management ▪ Ineffective project and program prioritization and resource allocation
5. Contracts for projects are too often awarded prior to the development of an adequate independent government cost estimate.	<ul style="list-style-type: none"> ▪ Lack of policy or standards ▪ Lack of qualified personnel ▪ Lack of databases with current or historical information
6. DOE's acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.	<ul style="list-style-type: none"> ▪ Insufficient qualified staff ▪ Competing priorities ▪ Personnel resource conflicts and budget limitations ▪ Lack of effective field and headquarters integration ▪ Lack of lessons learned ▪ Inadequate roles and responsibilities definition
7. DOE's organizational structure is not optimized for managing projects.	<ul style="list-style-type: none"> ▪ Competing priorities ▪ Lack of prioritization on project management ▪ Lack of alignment in authority, accountability, and responsibility ▪ Attributes of optimized organizational structure are not identified and universally understood
8. DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.	<ul style="list-style-type: none"> ▪ Conflicting guidance and priorities ▪ Lack of adequate personnel resources ▪ Inadequate training ▪ Lack of failed project reviews
9. Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.	<ul style="list-style-type: none"> ▪ Inadequate budget and personnel resources ▪ Competing and conflicting resource priorities ▪ Lack of effective portfolio management ▪ Inadequate field oversight
10. DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.	<ul style="list-style-type: none"> ▪ Inconsistent expectations and definition of federal ownership role ▪ Lack of experienced and qualified personnel ▪ Limited authority of FPDs ▪ Lack of accountability

2.4 ANALYSIS OF ROOT CAUSES

The root causes and themes identified from the top 10 issues are identified below. The sub-bullets provide more specificity to better define the context of the root cause.

- ◆ Insufficient number of personnel assigned to contract and project management functions
 - There are not adequate numbers of federal personnel assigned to contract and project management functions based on the number, size, and

complexity of Departmental projects, the historical and cultural reliance on M&O contractors, and the discrepancy between Federal government compensation as compared to the private sector.

- This is particularly a problem in the areas of front-end planning, risk management, project management requirements compliance, and project oversight.
- ◆ Some personnel lack appropriate skills to carry out all required contract and project management functions
 - There are not enough federal personnel with the requisite skills to plan and manage contracts and projects.
 - This is highlighted in the areas of front-end planning, risk management, independent government cost estimating, acquisition strategy development and planning, and oversight and management of large projects.
- ◆ Lack of alignment between contract and project management authority, accountability, and responsibility
 - There are inconsistencies between the defined and documented roles and responsibilities for federal contracting, project management, and program management personnel, and what their respective contract and project authority and accountability actually entails, which results in competing and conflicting project direction, ineffective use of resources, a lack of accountability, and limited authority of FPDs.
 - This is reflected in acquisition strategy development and planning, the way in which the Department is organized (which may not exhibit the attributes of an optimized, organizational structure), and the inconsistent expectations and definition of the federal ownership role.
- ◆ Lack of effective contract and project management integration between line and staff organizations at headquarters, between the field and headquarters, and between contract and project management personnel
 - Departmental organizations and personnel responsible for specific contract and project management functions are not effectively communicating and working together to integrate their activities, which results in inadequate contract and project management plans, performance, oversight, and results.
 - The lack of effective integration is particularly evident in front-end planning and acquisition strategy development and planning, where inadequate time is invested.

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- ◆ Insufficient budget resources allocated to contract and project management
 - The Department lacks the required budget resources to carry out the necessary contract and project management functions in accordance with established performance baselines.
 - Insufficient budget resources are a cause for contract and project management underperformance in the areas of front-end planning, contract administration and project oversight and adequate numbers of personnel with the appropriate skills.
 - ◆ Ineffective project and program prioritization and resource allocation negatively impacting portfolio, program, and project management
 - Often times there are competing, and in some cases, conflicting guidance between programs, as well as ineffective prioritization of budget requests and resource allocations.
 - Suboptimal portfolio management, prioritization and resource allocation in the areas of project oversight, program and project management, organizational structure, adequate numbers of federal personnel with the required skills, funding requests, acquisition strategy development and planning, adherence to project management requirements, the number of on-going active projects, and project oversight, or lack thereof, result in decisions that negatively affect contract and project management performance.
 - ◆ Inadequate training for some specific areas of need in contract and project management
 - Training has not always been developed and delivered to the specific areas of need in contract and project management; there needs to be better instruction of the integration between contract management and project management.
 - Areas identified in need of additional training include front-end planning and the use of project definition rating indices, risk management, change order control boards and configuration control, and more contract administration instruction for FPDs and “IPT Training” for IPT (integrated project team) members.

- ◆ Lack of defined benchmarks in specific contract and project management areas
 - While it is recognized that certain contract and project management activities are not optimized, there is a lack of management emphasis and direction and no defined benchmarks to serve as a guide for improved performance or to assess whether projects have failed reviews. In addition, there are no centralized databases of current and historical project information or lessons learned.
 - The lack of defined benchmarks, including policies and standards, is particularly relevant in workforce development, front-end planning, risk management, and independent government cost estimates.

To improve contract and project management performance, corrective measures identified in the Department's follow-on corrective action plan will focus on addressing, mitigating, and where possible, eliminating the root causes. These root causes are not insurmountable; with the proper management attention, including the required budget and personnel resources, improved contract and project management performance can be achieved.

Chapter 3

Summary and Next Steps

3.1 CHARACTERISTICS OF SUCCESSFUL PROJECTS

There are a number of characteristics that can contribute to successful project management within the DOE environment. A comprehensive list of characteristics of successful projects was identified by the National Academy of Sciences in their 1999 Report, *Improving Project Management in the Department of Energy*. This list was used as a key reference and benchmark in the context of our RCA and is still as germane today as it was when written in 1999. Select highlights from that report as items that are listed as essential or important for project success include:

- ◆ Sponsors know what they need and can afford.
- ◆ There is a senior project champion within the owner's organization.
- ◆ Project managers are experienced professionals dedicated to success.
- ◆ Contracts are clear and unambiguous.
- ◆ Accountability of project is understood.
- ◆ Owner's requirements and expectations are clearly understood.
- ◆ Project organization and mission are clearly understood.
- ◆ Depth, stability, and time commitments by key personnel are appropriate.

There is nothing new or unique about these characteristics. The Department endorses these characteristics as keys to project success, and in many cases, they were the reasons for past agency successes. Simply stated, when these conditions, qualities, and characteristics exist, projects have a higher probability of successful performance than when they are absent. Of course, the conditions, qualities, and characteristics require tailoring for the wide range of projects, which have very different scopes or purposes. These characteristics will be used as guidelines during the development of the corrective action plan (CAP).

3.2 IMPACT OF TOP 10 ISSUES ON 9 SELECTED PROJECTS

To further validate the currency and relevance of the RCA results, 9 on-going projects were selected to compare the top 10 contract and project management issues. The 9 projects were selected because of current or past contract and project management challenges, and also because of the significant lessons to be learned, shared, and communicated from their respective experiences. The Federal Project Director (FPD) and Contracting Officer (CO) for each project provided responses regarding which issues were encountered by their project. Appendix C provides the results of that survey.

The survey did in fact validate the results. The three most common issues impacting the 9 projects were included in the top contract and project management issues previously identified. Inadequate front-end planning prior to establishing project baselines was the most common issue identified by 8 of the 9 projects. Insufficient risk identification, assessment, communication, and management through project planning and execution were identified by 7 of the 9 projects. Lastly, 6 of the 9 projects responded that failure to request and obtain planned funding increased the risk of project failure.

The purpose of comparing the top issues against specific projects was to verify that the most significant issues identified during the workshop have direct applicability to current and past projects. While not all the issues were deemed directly relevant by the select few FPDs and COs, the expectation is that corrective measures directed at eliminating, or at least mitigating, the root causes would positively influence the performance of future projects.

3.3 PRELIMINARY CORRECTIVE MEASURE CONSIDERATIONS

As this RCA indicates, there are opportunities for continuous improvement in contract and project management activities. The following is a list of potential preliminary corrective measure captured during the two-day workshop. These, along with other future proposals, will be fully vetted in follow-on efforts to finalize a CAP.

- ◆ Acquire, develop, and retain a contract and project management federal workforce through comprehensive resource management.
 - Conduct a thorough assessment of existing capability and a needs analysis of current and future requirements;
 - Close skill and competency gaps;

- Implement a workforce staffing plan; and
- Provide training at the point of need to support mission-driven human capital management needs.
- ◆ Improve the efficiency and effectiveness of hiring practices.
- ◆ Improve the discipline and structure for certifying FPDs at predetermined skill levels to ensure competent management oversight of resources for appropriate projects at specific geographical locations; the right people, at the right place, at the right time.
- ◆ Improve and communicate the definition of roles and responsibilities for contract, project, and contractor management.
- ◆ Improve accountability at the individual and organizational level for both federal and contractor personnel.
- ◆ Enforce strict federal ownership and contractor adherence to the identification, definition, and justification of project needs.
- ◆ Improve the alignment, coordination, and integration of contract and project management functions, including integrated and timely change control management.
- ◆ Ensure compliance with DOE Order 413.3A, *Project Management for the Acquisition of Capital Assets*.
- ◆ Establish and implement a procedure to ensure that ongoing projects are re-evaluated frequently in light of changing missions.
- ◆ Establish and enforce a policy on the development and appropriate use of funded management reserve and contingency.
- ◆ Develop a disciplined project cost estimating capability to develop independent government cost estimates, conduct comprehensive cost analyses, and support more accurate budget development efforts.
- ◆ Ensure the financial and project management systems provide accurate, reliable, and timely information on contract spending and project costs.
- ◆ Provide better policy and guidance on the use of full funding and develop guidance to assist in the establishment of realistic incremental funding profiles based on the historical realities of the federal budgeting process.

- ◆ Improve the specific requirements in DOE Order 413.3A for front-end planning.
 - Consider use of a Project Definition Rating Index (PDRI), or a DOE version with comparable content, as a front-end planning tool.
- ◆ Establish performance baselines based on more complete project designs.
- ◆ Minimize the practice of “exceptions”, allowing project budget requests in advance of requisite up-front planning and establishment of the project’s performance baseline.
- ◆ Break up large “projects” (programs) into smaller projects to enable greater focus and requirements definition on smaller facility subsets and to enhance management span of control and oversight.
- ◆ Enhance the existing internal and external independent review processes to improve the front-end planning of projects before authorization to assure that the appropriate level and detail of planning has been completed.
- ◆ Establish a process and specific criteria for assessing the status of critical project technologies (e.g., a Technology Readiness Assessment process analogous to the one used by DoD and NASA)
 - Establish a rigorous independent review of project technology at CD-1 and CD-2 to review its readiness status and assure that appropriate technology development has been planned, estimated, and scheduled.
- ◆ Improve the identification and appropriate use of new contracts and contract types.
- ◆ Increase acquisition and contract management training for program managers and federal project directors.
- ◆ Improve the federal ownership and development of acquisition strategies.
- ◆ Increase federal oversight of acquisition plan implementation, including the writing of statements of work, evaluation criteria, and contractor performance incentives.
- ◆ Improve the planning and active management of project risks using defined systems and processes.
- ◆ Develop and use internal and external contract and project benchmarking data for continuous performance improvement.
- ◆ Develop and communicate a contract and project management lessons learned program for continuous performance improvement.

- ◆ Improve the federal oversight of contractors managing and operating the Department's facilities.
- ◆ Improve the discipline and structure for approving and controlling program and baseline changes to projects.

The above list is not all encompassing but documents some potential future corrective measures. There are certainly other measures requiring consideration, and these will be identified and further defined through the corrective action planning process. Once all of the potential corrective measures have been vetted, a comprehensive and integrated CAP will be established. The CAP will include a series of corrective measures directed at mitigating or eliminating the root causes to improve contract and project management performance. The focus will be on properly addressing the critical few having the biggest impact, which will have a positive impact on all of the identified contract and project management issues.

3.4 CORRECTIVE ACTION PLAN DEVELOPMENT AND IMPLEMENTATION

This report contains information on past DOE contract and project management challenges and their issues and underlying root causes. Improvements in contract and project management are the imperative. Future enhancements must be measurable and sustainable to achieve performance goals.

Many relevant areas for improvement have been highlighted as a result of this report, to include the composition of a federal workforce, their capabilities, organizational alignment and interaction, and management processes and systems. These represent some keys for future project success. Increased management and oversight and accountability in contract and project management will be an overarching theme.

To improve project performance, the identified root causes from this report will be addressed with appropriate and effective corrective actions and then actively tracked and managed over time. Contract and project management activities and responsibilities are interrelated. Effective performance in both areas is essential to achieving the Department's mission and goals.

Real, sustainable, and measurable contract and project management performance requires a DOE organizational and managerial commitment to continuous improvement from top to bottom. By focusing on project definition and front-end planning, resource allocation and acquisition strategy decisions, and risk management and project oversight, project performance will improve. This will require renewed investment in human capital to acquire, develop, and retain qualified personnel commensurate with the value and complexity of the projects.

These and other corrective measures will be merged into a comprehensive contract and project management CAP. This CAP will be developed by a DOE cross-departmental team and vetted across the agency and with appropriate stakeholders to garner maximum support. Some of these corrective measures can and will be implemented immediately; others will be addressed later, if necessary, if earlier (and future) corrective actions have not already mitigated their impact.

The information contained in this report is one more step towards contract and project management performance improvement. This report reflects a mandate to continuously improve contract and project management; to take requisite actions to exceed the Department's performance goals by incorporating the findings from this RCA into a comprehensive and integrated contract and project management CAP and to effect positive cultural change.

Appendix A

Documents Reviewed

UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

- [1] United States General Accounting Office, High Risk Series; Department of Energy Contract Management; December 1992.
- [2] United States General Accounting Office, High Risk Series; Quick Reference Guide; February 1995.
- [3] United States General Accounting Office, High Risk Series; Department of Energy Contract Management; February 1997.
- [4] United States General Accounting Office, Performance and Accountability Series; Major Management Challenges and Program Risks, Department of Energy; January 1999.
- [5] United States General Accounting Office; Determining Performance and Accountability Challenges and High Risks; November 2000.
- [6] United States General Accounting Office, Performance and Accountability Series; Major Management Challenges and Program Risks, Department of Energy; January 2001.
- [7] United States General Accounting Office, Performance and Accountability Series; Major Management Challenges and Program Risks, Department of Energy; January 2003.
- [8] United States General Accounting Office, Testimony Before the Committee on Government Reform, House of Representatives; Department of Energy, Status of Contract and Project Management Reforms; Robin M. Nazarro, Director Natural Resources and Environment; March 20, 2003.
- [9] United States General Accounting Office, Report to Congressional Requestors; Nuclear Weapons, Opportunities Exist to Improve the Budgeting, Cost Accounting, and Management Associated with the Stockpile Life Extension Program; July 2003.
- [10] United States General Accounting Office, Report to the Chairman, Subcommittee on Strategic Forces, Committee on Armed Services, U.S. Senate; National Nuclear Security Administration, Key Management Structure and

Workforce Planning Issues Remain as NNSA Conducts Downsizing; June 2004.

- [11] United States Government Accountability Office; Briefing to the Staff of the Committees on Science and Energy and Commerce, House of Representatives; Lawrence Livermore National Laboratory: Further Improvements Needed to Strengthen Controls Over the Purchase Card Program; June 14, 2004.
- [12] United States Government Accountability Office; Briefing to the Staff of the Committees on Science and Energy and Commerce, House of Representatives; Sandia National Laboratories: Further Improvements Needed to Strengthen Controls Over the Purchase Card Program; June 14, 2004.
- [13] United States Government Accountability Office; Report to the Committee on Government Reform, House of Representatives; Department of Energy, Further Actions are Needed to Strengthen Contract Management for Major Projects; March 2005.
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Appendix B

Prioritized List of Issues (With Further Detail)

- Priority #1 DOE often does not complete front end planning to an appropriate level before establishing project baselines.**
- a. There is a lack of early and effective integration between and among the functional management organizations (procurement, OEMC, nuclear safety, EMS, security), and with the program offices.
 - b. Projects are initiated and planned initially embracing optimistic assumptions.
 - c. Project cost estimates are unrealistic and based on overly optimistic assumptions that result in project failure.
 - d. Initial project requirements are not clear and/or complete.
 - e. DOE has developed comprehensive practice guidelines for the design and construction phases of projects but has not developed comparable guidelines for the early conceptual and pre-conceptual phases, when the potential for substantial savings is high. (DOE O 413.3A has policy and implementation being addressed by associated guidance documents in process).
 - f. Project teams are making tradeoffs and cutting corners in front end planning in order to meet the December 1 baseline date requirement to get the project into the budget for the current year.
- Priority #2 DOE does not have an adequate number of federal contracting and project personnel with the appropriate skills (e.g., cost estimating, scheduling, risk management skills, and technical skills) to plan, direct and oversee project execution.**
- a. DOE has a significant number of competing priorities for skilled personnel that result in inadequate assignment of personnel resources to projects.
 - b. DOE acquisition personnel are not sufficiently experienced to provide the business advice necessary for its major systems acquisitions.
 - c. DOE has difficulty in its ability to recruit and retain contract and project management personnel for successful project execution.

-
- Priority #3** **Risks associated with projects are not objectively identified, assessed, communicated, and managed through all phases of planning and execution.**
- a. Project teams tend to be overly optimistic and are reluctant to use external assistance to identify and evaluate risk.
 - b. When assessing risk, there is pressure from program managers and other senior management to minimize risk. Managers want to keep the project afloat. Project Managers may know the risks but prefer “compression” of risk to preclude the project’s being cancelled.
 - c. Risk management is not routinely used as a key project planning tool.
 - d. Risk mitigation activities are not fully captured in cost and schedule baselines.
 - e. Risk management plans and assessments are often put on the shelf and forgotten. Project teams think of risk assessment as a document and not a process.
 - f. The resolution of risk is not tied to schedule and cost baselines.
 - g. Projects often do not take advantage of the full suite of risk-handling strategies available.
- Priority #4** **Failure to request and obtain full funding or planned incremental funding results in increased risk of project failure.**
- a. Funding instability drives contract structure and changes, protracts schedules, and increases costs.
- Priority #5** **Contracts for projects are too often awarded prior to the development of an adequate independent government estimate.**
- a. DOE does not have a consistent and effective way of developing independent government cost and schedule estimates.
- Priority #6** **DOE’s acquisition strategies and plans are often ineffective and are not developed and driven by federal personnel. DOE does not begin acquisition planning early enough in the process or devote the time and resources to do it well.**
- Priority #7** **DOE’s organizational structure is not optimized for managing projects.**
- Priority #8** **DOE has not ensured that its project management requirements are consistently followed. In some instances projects are initiated or carried out without fully complying with the processes and controls contained in DOE policy and guidance.**

Priority #9 Ineffective DOE project oversight has sometimes resulted in failure to identify project performance issues in a timely manner.

- a. Inadequate systems for measuring contractor performance
- b. Approval of construction activities before final designs were sufficiently complete
- c. Ineffective project reviews, inadequate use of project management controls
- d. DOE lacks an effective management feedback loop that allows for identification and correction in real time

Priority #10 DOE is not effectively executing its ownership role on some large projects with respect to the oversight and management of contracts and contractors.

Appendix C

Matrix of Top 10 Contract and Project Management Issues and DOE Projects

Appendix C summarizes the responses from each Federal Project Director and Contracting Officer for the 9 selected projects and identifies which of the top 10 issues have impacted each of the respective projects.

Table C-1. Matrix of Top 10 Contract and Project Management Issues—9 Selected DOE Projects

Contract and Project Management Issues	DOE Projects								
	Waste Treatment and Immobilization Plant (Hanford)	Depleted Uranium Hexafluoride Conversion (Portsmouth/ Paducah)	Radioactive Liquid Tank Waste Stabilization and Disposition (Hanford)	SNM Component Requalification Facility (Pantex)	Highly Enriched Uranium Materials Facility (Y-12)	Building 12-44 Production Cells Upgrade (Pantex)	National Ignition Facility (LLNL)	Linac Coherent Light Source (SLAC/ Stanford)	National Concept Stellarator Experiment (PPPL/ Princeton)
Inadequate number of federal contracting and project personnel with appropriate skills		▲	▲		▲				
Organizational structure					▲		▲		
Failure to request and obtain full or planned incremental funding	▲		▲		▲		▲	▲	▲
Inadequate front end planning	▲	▲	▲	▲	▲	▲	▲		▲
Ineffective acquisition strategies and plans		▲			▲		▲		
Poor/no independent government cost estimates	▲		▲		▲		▲		
Identification, assessment, communication, and management of risk during project planning and execution	▲	▲	▲		▲		▲	▲	▲
Adherence to project management requirements			▲			▲			
Ineffective project oversight					▲	▲			
Role of owner in oversight and management of contracts and contractors					▲				

C-3



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for the United States Congress and the Department of Energy

OFFICE OF ENVIRONMENTAL MANAGEMENT: MANAGING AMERICA'S DEFENSE NUCLEAR WASTE



2007

NATIONAL ACADEMY OF
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December 2007

**OFFICE OF ENVIRONMENTAL
MANAGEMENT:**

**MANAGING AMERICA'S DEFENSE
NUCLEAR WASTE**

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The views expressed in this report are those of the Panel. They do not necessarily reflect the views of the Academy as an institution.

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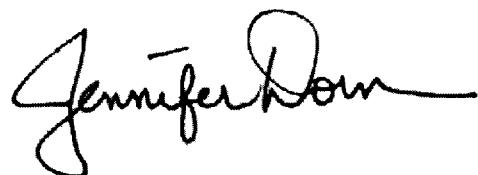
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FOREWORD

Fifty years of nuclear weapons production and government-sponsored nuclear energy research have left our nation with millions of gallons of radioactive waste, thousands of tons of spent nuclear fuel and special nuclear material, and enormous quantities of contaminated soil and water located at numerous sites across the country. In 1989, the Office of Environmental Management (EM) was established within the U.S. Department of Energy to lead a multi-billion dollar, decades-long effort to clean up these dangerous materials and take other actions to protect the environment and the health of communities near these sites. Expressing concern about shortcomings in federal oversight, control and accountability, repeated cost and schedule overruns, and numerous challenges to contract awards, the Senate and House Appropriations Committees asked the National Academy of Public Administration to undertake a management review of the EM Program.

The Academy Panel conducted this project on a highly interactive basis with EM, providing proposals on how to improve the management of the program as the project progressed. This report summarizes 19 months of intense effort, collaboration, and cooperation among the Panel members, project team and EM. As a result, EM will already have implemented, or be in the process of implementing, almost every Panel recommendation by the time this report is published. However, EM alone cannot correct a fundamental problem that the Panel identified: a mismatch between the work that the Office of Environmental Management has been asked to perform and the staff resources required to perform it. The Department of Energy, the U.S. Office of Management and Budget, and Congress must work together to address this issue.

The Academy extends its appreciation to the members of the project Panel for their outstanding work and keen insights, and to the project team for its excellent staff work. It also wishes to thank the leadership of the Office of Environmental Management and the hundreds of people interviewed during this project for the time they made available and the help they provided in support of this effort to improve the performance of this critical program.



Jennifer L. Dorn
President and Chief Executive Officer

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ACRONYMS

Academy	National Academy of Public Administration
BNI	Bechtel National Inc.
CBFO	Carlsbad Field Office
CD	Critical Decision
CFR	Code of Federal Regulations
CLF	Civilian Labor Force
COE	Army Corps of Engineers
CONOPS	Concept of Operations
COO	Chief Operations Officer
CPAF	Cost Plus Award Fee
CPIF	Cost Plus Incentive Fee
CPR	Contract Performance Report
CTA	Central Technical Authority
DAS	Deputy Assistant Secretary
DNFSB	Defense Nuclear Facilities Safety Board
DoD	Department of Defense
DOE	Department of Energy
EERE	Office of Energy Efficiency and Renewable Energy
EM	Office of Environmental Management
EMAB	Environmental Management Advisory Board
EMCBC	Environmental Management Consolidated Business Center
EMCIP	Environmental Management Career Intern Program
EMIS	Environmental Management Integrated Schedule
EM-MI	Environmental Management-Management Initiative
EV	Earned Value
EVMS	Earned Value Management System
EWD	(House and Senate Appropriations Subcommittees on) Energy and Water Development
FAR	Federal Acquisition Regulations
FHCS	Federal Human Capital Survey
FMC	Facility Management Contractor
FPD	Federal Project Director
FTE	Full-Time Equivalent
FY	Fiscal Year
GAO	Government Accountability Office
GFSI	Government-Furnished Services or Items
HC	Human Capital
HCA	Head of Contracting Activity
HCMP	Human Capital Management Plan
HCSC	Human Capital Steering Committee
HR	Human Resources

HSS	Office of Health, Safety and Security
ICP	Idaho Cleanup Project
IPABS	Integrated Planning, Accountability and Budgeting System
IPT	Integrated Project Team
ISMS	Integrated Safety Management System
IT	Information Technology
LCC	Life-Cycle Cost
M&I	Management and Integrating Contract
M&O	Management and Operating Contract
NAVFAC	Naval Facilities Engineering Command
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
OECM	Office of Engineering and Construction Management
OH	Ohio Field Office
OPAM	Office of Procurement and Assistance Management
OPM	Office of Personnel Management
ORP	Office of River Protection
PARS	Project Assessment and Reporting System
PBA	Performance-Based Acquisition
PBS	Project Baseline Summary
PCO	Project Control Officer
PDAS	Principal Deputy Assistant Secretary
PMCDP	Project Management Career Development Program
PPPO	Portsmouth/Paducah Project Office
QA	Quality Assurance
QPR	Quarterly Project Review
QSA	Quality and Standards Assurance
R2A2	Roles, Responsibilities, Authorities, and Accountabilities
REA	Request for Equitable Adjustment
RF	Rocky Flats
RL	Richland Operations Office
SBA	Small Business Administration
SEB	Source Evaluation Board
SES	Senior Executive Service
SR	Savannah River
TPC	Total Project Cost
TRA	Technology Readiness Assessment
TRL	Technology Readiness Level
WTP	Waste Treatment and Immobilization Plant

EXECUTIVE SUMMARY

Of the Department of Energy's (DOE) \$24 billion budget for fiscal year 2008, the \$5.6 billion for the Environmental Management Program (EM) is a little known, but vital investment in the cleanup of vast quantities of radioactive and chemical waste and contaminated soil, water, and buildings that resulted, primarily, from the legacy of 50 years of nuclear weapons production and government-sponsored nuclear energy research. The complexities associated with these activities have been enormous, and oftentimes the work has required the development of groundbreaking technologies. Since EM's inception in 1989, it has closed nearly 80 percent of the 108 contaminated sites for which it is responsible. But the nuclear and chemical waste at the remaining sites pose risks to the surrounding communities and the environment, and EM's progress has been carefully monitored by leaders in Congress. When many of EM's major projects experienced repeated cost and schedule overruns, congressional concerns about federal oversight, control, and accountability heightened.

In September 2005, the House and Senate Energy and Water Development Appropriations Subcommittees asked the National Academy of Public Administration (Academy) to undertake a management review of EM, emphasizing their concerns about how EM was organized and managed and its acquisition and project management operations. EM Assistant Secretary Rispoli asked the Academy to add another element to the study, an assessment of EM's human capital operations.

When this study began in April 2006, the Academy Panel found an organization facing several serious challenges as it struggled to redefine and reorganize itself. James Rispoli had assumed the EM Assistant Secretary position eight months earlier and was in the midst of reversing the direction set by EM's prior leadership—a path based on a policy that the organization was “going out of business” and that, with the appropriate contracts and contractors, the level of federal employment could be significantly reduced. While there were successes at several sites with this approach, the overwhelming criticisms from the Government Accountability Office, the DOE Inspector General, and observers interested in how EM's cleanup work was progressing at other sites throughout the country were that it was taking too long to award contracts, the work was going substantially slower than predicted, and the cost was substantially more than projected.

In May 2006, Assistant Secretary Rispoli implemented a reorganization of EM headquarters. In the field, site offices also had begun an effort to re-baseline EM's entire project portfolio, and the results were producing new project schedules and funding profiles that showed a much longer term mission for EM than projected by past leadership. In addition, EM was being given a new responsibility for nuclear and chemical waste being generated by ongoing federal activities, which solidified a long-term future for EM. Although bolstered by its new mission and the sense of security it provided to staff, the program was hampered by the lack of a systematic approach to re-charting the organization's new direction; organization and management issues that included a lack of clarity in roles and responsibilities in headquarters and between headquarters and the field; insufficient acquisition and personnel delegations of authority; and human capital challenges, not the least of which was that EM's staff level had decreased about 40 percent since

2001. This significant decrease in staff was the outgrowth of the organizational downsizing that resulted from prior policies and the attrition of an aging workforce.

To fully identify and address the problems, the Academy Panel and staff embarked on a highly interactive process with EM's senior management and staff that fostered significant collaboration. Rather than waiting until the end of the study to provide recommendations, the Panel provided EM three working documents, "Observations Papers," then met with EM's senior leadership to discuss the ideas presented, the rationale behind them, and implementation options. The Panel found that Assistant Secretary Rispoli was a leader who was eager to build a solid foundation for the organization's future and who welcomed the Panel's counsel about how to overcome the challenges facing EM. This resulted in EM taking actions to implement most of the Panel's proposals prior to the publication of this report.

PROJECT MANAGEMENT

If there is any one feature that is the hallmark of Assistant Secretary Rispoli's tenure at EM, it is the increased emphasis on project management. Before this study began, Assistant Secretary Rispoli already was initiating improvements in this critical area. EM is the only DOE program to rigorously and consistently apply core project management principles to all of its projects. To further improve the quality and rigor of project management, EM also began a Best-in-Class Project and Contract Management initiative to identify and fill skill gaps in its project management and contract management capacity at all of its sites.

During the course of the study, the Panel made several proposals to further advance EM's project management capabilities that included developing better tools for managing and overseeing project performance; developing project-specific success metrics; performing a general assessment of EM's quality assurance program; developing and deploying Technology Maturity Levels; anticipating and budgeting for project risks; and providing management and technical training to federal project staff. EM has accepted virtually all of the Panel's proposals and is in the process of implementing them.

The Panel also has consistently highlighted issues in other areas that affect project management, such as human capital and organization and management. One of the Panel's final recommendations to EM in the area of project management is that EM leadership begin a concerted effort to determine how it plans to meet the human capital and other logistical challenges inherent in the Best-in-Class initiative and to communicate its plans to the staff. The Panel applauds the improvements EM has made in project management, but advises that EM's ability to fully implement them will be at risk if EM does not have sufficient staff.

ORGANIZATION AND MANAGEMENT

One major goal of this study has been to identify ways to improve EM's organization and management in ways that support Assistant Secretary Rispoli's project management initiatives. The purpose of the Assistant Secretary's reorganization of EM headquarters was to improve EM

program performance by establishing clear lines of authority and accountability; enhancing the acquisition process; improving project performance; and focusing on human capital development to create a highly skilled and competent workforce. Although the new headquarters structure has achieved many of the Assistant Secretary's reorganization goals, the Panel found several flaws with it. However, rather than propose another major reorganization so soon after the one in May 2006, which still has not been fully implemented, the Panel proposed a few, less basic changes to the new structure, and instead focused on management improvements that would make the organization more responsive to the Assistant Secretary's vision. The Panel proposed that EM:

- expand and strengthen the Office of the Chief Operations Officer (COO) to give the COO the previously lacking capacity to better provide leadership and technical assistance to the field. In particular, the Panel believed that the COO needed greater staff capacity to oversee projects that were in difficulty.
- establish a management analysis office to give the Assistant Secretary the capacity for greater analytic rigor with which to inform management's decisionmaking
- define organizational roles and responsibilities to eliminate duplication and conflict, reduce EM headquarters micromanagement of the field, and establish clear lines of authority and accountability
- place a priority on administering the business and management side of the organization, such as the human capital, budget, and acquisition functions

EM has embraced these proposals and is in the process of implementing them. In this report, the Panel offers additional recommendations that address the Assistant Secretary's role in EM senior leadership's efforts to define their roles and responsibilities; an examination of the organizational options for EM's information technology and cyber-security functions; the organizational realignment of functions and future consolidation of the two Hanford site offices; and the development of a corporate communications and outreach program with the Tribes/Pueblos and community stakeholders.

ACQUISITION

Another major focus of this study has been to improve EM's acquisition processes. The Academy Panel and staff worked closely with EM in its efforts to build its capacity to execute and administer the complex, multi-million dollar contracts that comprise EM's contract portfolio. The Assistant Secretary provided the foundation for this effort in the May 2006 reorganization by creating the position of Deputy Assistant Secretary (DAS) for Acquisition and Project Management. The DAS has been spearheading EM's acquisition improvement efforts, which have at their centerpiece an Acquisition Center designed to streamline and strengthen the award process for major EM contracts.

Throughout this study, the Panel made several proposals to advance the DAS' change management initiatives, including developing guidance for determining appropriate contract types for acquisitions and the staff's role in dealing with contractors; improving EM's

acquisition oversight program; developing a staffing request to hire individuals with the necessary procurement analyst expertise; centralizing the award and administration of all EM financial assistance at the Environmental Management Consolidated Business Center (EMCBC); and reviewing all EM processes for reviewing and approving acquisition transactions at EM headquarters. EM agreed to virtually all the Academy Panel's proposals related to acquisition and, in many cases, implementation is well underway. Most importantly, EM's leadership has demonstrated an acute awareness of the challenges presented by the current acquisition environment, openness to considering a variety of options for dealing with those challenges, and the willingness to introduce major changes. As a result, in the last 19 months, EM has made significant progress to reform its acquisition processes and infrastructure, which shows great promise for facilitating advanced planning and increasing the speed of the acquisition process.

Although EM has made significant progress to improve its acquisition processes, its ability to further advance some critical aspects of its acquisition operations remains outside of its direct control. DOE's Office of Procurement and Assistance Management (OPAM) oversees EM's contracting activities and delegates to EM only limited authority to execute acquisition actions. At present, EM's competitive transactions of \$15 million or more, subcontracts of \$25 million or more, and all other contract and grant/cooperative agreement actions of \$10 million or more are subject to OPAM's business clearance review process, which has been a major source of frustration throughout EM because of the lengthy amount of time it generally requires. A report from OPAM's acquisition process reengineering team has recommended raising the competitive threshold to \$50 million, but makes no recommendations to increase the other contract thresholds. The report also recommended several improvements to OPAM's business clearance review process. In the Academy Panel's view, EM's ability to successfully improve its acquisition operations is significantly impacted by prompt action needed by OPAM to:

- increase EM's Head of Contracting Activity delegation level to at least \$100 million, an amount that is commensurate with the large transactions customary to EM, coupled with effective procurement management reviews to ensure that EM's acquisition offices have adequate numbers of highly competent staff who are carrying out their responsibilities according to policy and regulations
- implement the recommendations included in the acquisition process reengineering team report to help reduce the delays that have been experienced

To further streamline and expedite EM's acquisition operations, efforts also are needed to build the capacity, capability, and autonomy of EM sites to manage their own contract administration workloads with reduced involvement from DOE and EM headquarters. This will require additional staff not currently allocated to EM's acquisition offices.

HUMAN CAPITAL

Paramount to bringing EM into a new era that sees sites moving more quickly towards closure is greater attention to EM's human capital needs. Toward that end, the Panel made several

proposals and recommendations to improve various aspects of EM's human capital operations, such as:

- increasing EM's human capital competencies
- developing recruitment strategies that balance the need for senior-level positions with the need for junior- and mid-level positions that can become the core for EM's future workforce
- providing written goals and operating procedures for EM's technical cadre and improving EM's human resources practices with respect to cadre members
- continuing initiatives to improve EM's work environment; the selection methodology and quality of its leadership; and representation and diversity

The Panel also made proposals to address issues surrounding the human resources (HR) services DOE headquarters provides to EM headquarters. EM leadership has been vocal in its concerns about the servicing arrangement and has sought increased delegations to the EMCBC to provide HR services to EM headquarters. In this report, the Panel recommends that EM conduct a pilot demonstration that gives full delegated authority to the EMCBC to provide HR servicing to EM headquarters.

Of greater concern to the Panel as this study draws to a close, however, is its observation that several critical occupational areas, including project controls, cost-price analysis, safety, quality assurance, acquisition, and contract administration, appear to be understaffed at many EM site offices. Benchmarking exercises performed by Academy staff to compare EM's staffing levels with other organizations that perform similar functions, and the work underway by EM's Best-in-Class Project and Contract Management initiative to identify where sites have skill gaps strongly suggest that the EM staff allocation is too low. EM's onboard workforce has been dramatically reduced since 2001. The change in EM's end game from "going out of business" to a long-term future that includes new mission responsibilities has not been accompanied by a reassessment within DOE of the staffing levels needed for EM to execute its new mission.

Assessing the organization's workload and determining the resources required to perform it are major challenges facing EM. The Panel proposed that EM develop an organization-wide workload forecasting methodology that has sufficient rigor and objectivity to gain acceptance both within and outside of the organization. In addition, the Panel proposed that EM include an organization-wide analysis of its occupational distribution, pay plan utilization, and supervisory ratios as part of an overall workload planning initiative. EM is in the process of adopting these proposals. DOE also is embarking on a Department-wide workforce analysis effort. However, the Panel believes that EM cannot wait for these workforce analyses to be completed. The data developed by the Panel support the need for immediate action to increase EM's staffing allocation to counter the staffing decreases EM has experienced in recent years and make it commensurate with the workload that has been reinvested in the organization. The Panel strongly urges that the Department increase EM's staffing allocation by at least 200 over currently budgeted levels. The Panel is confident that the rigorous workload analysis it has recommended will validate this increment and suggest the need for additional staffing as well.

Filling these additional positions will be a major challenge for EM. The Panel is concerned that despite EM leadership lifting the hiring restrictions it had placed on site offices and urging sites to fill their vacancies, EM's staff vacancy rate did not change appreciably over the last year. As of September 2007, EM's staffing ceiling was 1,495 and its onboard strength was approximately 1,380. In this report, the Panel recommends that EM, with the active support of DOE, develop innovative recruitment strategies to attract and hire the talent needed to meet its current and future mission objectives.

A PATH TO THE FUTURE

Throughout this study, EM's leadership has shown its commitment to improving how the organization functions. It has pursued virtually all of the Academy Panel's proposals made throughout the course of this study. And the new Management Analysis and Process Management Office, established at the Academy Panel's urging, has been developing a path forward that integrates its management improvement efforts in an organized, systematic fashion. Called the EM Management Initiative, it is a model designed to help EM accomplish its mission through clearly defined roles and responsibilities in headquarters and the field; disciplined systems and processes; useful tools and job aids; and a management approach that emphasizes results.

As part of this initiative, EM will be examining how it defines its programs and the appropriate roles of headquarters and the field to carry them out. The program management planning effort will then drive a workforce planning effort. The Panel is optimistic that this systematic approach will provide an organizational logic to drive and inform the numerous management improvement actions EM currently has underway. It thinks that this effort also can be a foundation to build upon for EM to engage in continuous management improvement activities. To manage an effort as large as the EM Management Initiative and to institutionalize an ongoing management improvement process, the Panel recommends that EM establish a management action planning process to guide the organization through all management improvement activities, both current and future.

The Panel is optimistic that with the changes underway, EM is on a solid path to becoming a high-performing organization. With the Department's support, it needs to ensure that it has the resources necessary to turn this opportunity for organizational improvement into reality.

CHAPTER 1

INTRODUCTION

On September 23, 2005, the chairmen and ranking minority members of the House and Senate Energy and Water Development (EWD) Appropriations Subcommittees sent a letter to the Secretary of DOE directing that EM undertake a management review with the National Academy of Public Administration (the Academy) within available funds. Specifically, the letter asked that the Academy focus on:

- the organization and management of EM, where the subcommittees expressed concerns “in light of the repeated failings in federal oversight, control, and accountability over the years”
- EM’s acquisition and project management operations, where the subcommittees believed that “the EM program consistently exceeds projected costs and timeframes for clean up projects, and has its contract awards constantly challenged”

The request was inspired, in part, by another Academy study of DOE issued in September 2004, which examined the organization, management, and acquisition operations in the Office of Energy Efficiency and Renewable Energy (EERE). During discussions to finalize the terms and conditions of this study, EM’s Assistant Secretary, James Rispoli, asked that the Academy also evaluate EM’s human capital operations, including competencies needed, which the Assistant Secretary believed were the root cause of the congressional concerns noted above. A contract to carry out the EM study was approved on April 24, 2006.

THE MAJOR ISSUES

When this study began in April 2006, the Academy Panel found an organization facing several serious challenges as it struggled to redefine and reorganize itself. New leadership and a new mission had reversed the organization’s mindset from one that was “going out of business” to one with a long-term future. EM was struggling to implement a new headquarters organization and to chart a new direction for itself. Although Assistant Secretary Rispoli was trying to develop the acquisition capability needed to acquire and administer the complex multi-million dollar contracts that comprise EM’s contract portfolio and infuse EM with a more rigorous project management regime to oversee those contracts, those efforts were being hampered by problems that were both in and out of EM’s control. Organization and management issues included a lack of clarity in roles and responsibilities in headquarters and between headquarters and the field. There were numerous acquisition and human capital challenges, including insufficient delegations of authority in both areas. However, as the study progressed, it became evident that one human capital problem was permeating all of the areas being examined by the Panel—the mismatch between EM’s workload and the skills and technical expertise needed to perform it and the organization’s staffing levels.

INTERACTIVE NATURE OF THE STUDY

This study continues the process used during the EERE study to have an ongoing, interactive approach to the Academy's evaluation. The study's design included three unpublished Observations Papers that gave the Academy Panel opportunities throughout the study to provide its assessment of the problems and offer proposals to allow EM to more effectively achieve its mission. The Panel provided these papers to EM in September 2006, January 2007, and August 2007. A list of all the proposals made in those documents, EM actions taken, and Academy Panel remarks are included at the end of this report in Attachment 1.

As with the EERE study, this process fostered significant collaboration between the Academy Panel and staff and EM's leadership on the issues as they were being identified. Based on the Panel's ongoing advice, EM made numerous changes in its processes and procedures and modified some of the specifics of the May 2006 reorganization of EM headquarters. The extensive data collection process during the study also provided a mechanism for EM employees, contractors, stakeholders, regulators, and Native American Tribes to have input and express their opinions about the EM Program and how it operates.

EM'S MISSION AND FUNDING

The EM Program¹ was established in 1989 to complete the safe cleanup of the legacy waste and environmental contamination that resulted from 50 years of nuclear weapons production and government-sponsored nuclear energy research. This legacy waste includes millions of gallons of radioactive waste; thousands of tons of spent nuclear fuel and special nuclear material; and huge quantities of contaminated soil and water. To achieve its mission, EM undertakes a variety of interrelated activities, often referred to as "cleanup." Through the end of fiscal year (FY) 2007, EM will have completed cleanup at 85 out of a total of 108 sites, although the remaining sites are quite large and will be active for decades to come. Out of the DOE FY 2008 budget request of \$24.3 billion, nearly 25 percent—about \$5.6 billion—is the responsibility of EM. The bulk of this sum is in a "Defense Environmental Cleanup" account. EM also is funded by a "Non-Defense Environmental Cleanup" account and a "Uranium Enrichment Decontamination and Decommissioning Fund."

Working through a large contractor workforce, estimated at about 34,000,² EM staff are responsible for a vast array of construction, decontamination, decommissioning, packaging, storing, and transportation activities related to the cleanup and/or closure at the affected sites. The size and complexity of the work are immense, and estimates of the Department's liability for these cleanup operations are dependent on assumptions about future activities, such as policy decisions and annual funding levels that are, by their nature, inherently uncertain. The EM

¹ The Office of Environmental Management was originally called the Office of Environmental Restoration and Waste Management.

² EM's contractor workforce is about one third of an estimated 100,000 contractors working for the entire Department of Energy.

Program's FY 2006 unaudited estimates of its environmental and disposal liabilities for the remaining work (post FY 2007) were almost \$155 billion.

Although large in terms of DOE's overall budget authority and future liabilities, EM's staffing level comprises a relatively low percentage of DOE's total staff. The 1,500 full-time equivalents (FTEs) requested in the 2008 budget represent only about 10 percent of DOE's total employment of about 15,500 FTE. EM's current employment levels declined sharply from an on-board strength of 2,500 in FY 2001. Prior management views on the program's future and the role of federal employees working for this program took their toll on EM both in terms of staff numbers and morale. For several years, EM was considered to be an organization that was "going out of business" in the near future. Under EM's current leadership, however, more realistic assessments of the time needed to clean up the legacy waste now show activity continuing well into the third decade of this century and in some cases beyond, with the need for monitoring the cleanup sites continuing many decades after that. More recently, EM also has been given a role in the cleanup of waste newly generated by many of the Department's ongoing activities. These changes in mission and operations have not been reflected in EM's staffing allocation. This mismatch between the work for which EM is responsible and the staff required to perform it is discussed throughout this report.

OTHER STUDIES AND ACTIVITIES UNDERWAY

At the same time as the Academy Panel was engaged in this study, other organizations also were examining EM's operations. The Government Accountability Office (GAO) has conducted reviews of DOE activities for several years. The EWD subcommittees requested that GAO review DOE project management activities as well as the management of cost and schedule for selected DOE projects. The GAO studies include, but are not limited to, EM projects. At the request of the EWD subcommittees, GAO and Academy staff periodically exchanged information on the status of their respective activities.³ At the same time as this report is being published, GAO will be working on a study of selected EM operating projects.

During the course of this study, Academy staff also exchanged information with the Environmental Management Advisory Board (EMAB).⁴ The Academy project director for this study briefed the EMAB at its meeting in Richland, WA on August 24, 2006. Academy staff and the EMAB also established a mechanism to keep the EMAB informed of the Panel's activities. Likewise, the EMAB shared with Academy staff information on the recommendations it made to Assistant Secretary Rispoli that deal with human capital and communications, among other subjects.

³ Among the GAO reports reviewed for this study were: *Consistent Application of Requirements Needed to Improve Project Management* GAO-07-518. May 11, 2007; *Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Delays* GAO-07-336. March 27, 2007; *Nuclear Cleanup of Rocky Flats: DOE Can Use Lessons Learned to Improve Oversight of Other Sites' Cleanup Activities* GAO-06-352. July 10, 2006; *DOE Contracting: Better Performance Measures and Management Needed to Address Delays in Awarding Contracts* GAO-06-722. June 30, 2006.

⁴ The EMAB was established under the Federal Advisory Committee Act to provide the Assistant Secretary of EM with information, advice, and recommendations on issues affecting the EM Program.

At the end of October 2006, EM's senior leadership team participated in a two-day offsite meeting.⁵ The meeting's theme was *Shaping EM's Future*, and resulted in EM establishing four working groups to address the following areas:

- roles, responsibilities, authorities, and accountabilities
- embracing diversity
- communications
- business processes

The working groups were co-chaired by a senior headquarters official and a senior field official. Teams had core members to carry out the basic work as well as other "consulting" officials whose responsibilities overlapped those of the teams. Academy staff met periodically with these groups, which were charged with addressing the Panel's proposals in their respective areas of focus.⁶

STUDY METHODOLOGY

The Academy convened an expert Panel experienced in organization, human capital management, acquisition, and project management to guide the project's research and make proposals to improve EM's operations. Staff experienced in these subject areas were recruited to support the Panel. For acquisition expertise, the Academy subcontracted with the Jefferson Consulting Group. Biographical sketches of Panel members and staff are provided in Attachment 2.

The primary means of data collection were interviews with EM and other DOE staff in headquarters and the field; community groups; members of Site-Specific Advisory Boards; impacted Native American Tribes; and state and federal regulators. Academy staff visited every major EM site, including a mixture of sites owned by EM and those owned by other DOE organizations, and several smaller sites.⁷ Staff also reviewed applicable documents, including GAO reports, DOE Inspector General reports, Office of Personnel Management studies, budget materials, and other data. In addition, Academy staff conducted benchmarking interviews with other agencies to draw comparisons with EM's contracting and workforce forecasting procedures. A list of persons interviewed or contacted throughout the study is found in Attachment 3.

⁵ The Assistant Secretary has meetings quarterly with all EM senior managers. Attendees include the Principal Deputy Assistant Secretary and Chief Operations Officer; the Deputy Assistant Secretaries and office directors in headquarters; all site managers from the larger sites and federal project directors at the smaller site; and a few other individuals, such as the DOE counsel assigned to EM.

⁶ As of November 2007, two teams had finished their work.

⁷ Site offices visited included the Ohio Field Office, the Environmental Management Consolidated Business Center, the Idaho Operations Office, the Savannah River Operations Office, the Carlsbad Field Office, the Oak Ridge National Laboratory, the Los Alamos National Laboratory, the Richland Operations Office, the Office of River Protection, the Nevada Site Office, the Portsmouth/Paducah Project Office, the Brookhaven National Laboratory, and the Moab Site Office.

As indicated earlier, the Academy Panel and staff and EM management established an open, interactive relationship. In addition to structured interviews, Academy staff were invited to many EM management meetings to gain an understanding of the internal dynamics of the organization. These meetings also allowed Academy staff to provide to the Assistant Secretary and other senior executives informal feedback on EM's management processes.

The Panel met five times during the course of the study to review progress; review and approve interim Observations Papers; and provide direction to the staff. EM's senior leadership attended the Panel meetings to exchange views with the Panel. DOE representatives and congressional staff also attended some of the meetings.

NATURE OF THIS REPORT AND APPENDICES

This report summarizes the work of the Academy Panel and staff performed during the last 19 months. In the three Observations Papers, however, Academy staff presented extensive factual information that was the basis for the Panel's proposals made throughout this study and the final recommendations in this report. Because the papers were unpublished documents, the Academy Panel and staff determined that some of the detailed information in the Observations Papers, excluding data that clearly had been overtaken by events, should be made available as appendices to those who want to delve into more detail. When possible and appropriate, data have been updated.

ORGANIZATION OF THE REPORT

The remainder of the report is organized as follows. Chapter 2 discusses the May 2006 reorganization of EM headquarters; organizational roles and responsibilities; and recent changes that EM has made or plans to implement as a result of this study. The chapter restates as recommendations several of the proposals made in the Observations Papers and includes new recommendations as well. Chapter 3 examines EM's acquisition operations and oversight processes and its efforts to introduce significant improvements throughout the acquisition lifecycle by implementing an Acquisition Center. Four new recommendations are made in two areas examined since the August 2007 Observations Paper was issued—EM's small business contracting program and contract administration. Chapter 4 provides an in-depth look at EM's project management practices, including the improvements that have been made and the additional improvements that are being planned. Two new Panel recommendations are offered. Chapter 5 examines EM's internal human capital/human resources practices, and provides benchmarking information on workforce estimating procedures in other organizations. The chapter clarifies and reinforces proposals previously made in the Observations Papers and includes four new recommendations.

CHAPTER 2

ORGANIZATION AND MANAGEMENT

During its relatively brief existence, EM has experienced several reorganizations and faced serious questions about its future. When James Rispoli assumed the EM Assistant Secretary position on August 10, 2005,⁸ the organization he inherited was troubled. It already had lost nearly half its staff from the 2001 level, and staff were told the organization was going out of business. It also was in the midst of an A-76 study that might further reduce its scientific and engineering workforce. Not surprisingly, morale was at a very low ebb. From a functional standpoint, the lines delineating responsibility and accountability were blurred throughout the headquarters operation, making it difficult to know who had ownership for any given issue.

Assistant Secretary Rispoli was able to secure a cancellation of the A-76 study and, like several of his predecessors, made plans to reorganize EM headquarters. The purpose of the reorganization was to improve EM program performance by establishing clear lines of responsibility and accountability and enhancing its human capital activities. In designing the new structure, Assistant Secretary Rispoli had in mind the following four objectives:

1. focus on the acquisition process
2. improve project performance and assess improvements
3. improve interactions with the field and resolve issues
4. focus on human capital development to create a highly-qualified, competent workforce⁹

The ensuing changes to EM headquarters affected almost every office, and during the course of this study, EM has made considerable progress to implement its new structure. As the Panel completes its study, it recognizes that the reorganization has not been fully implemented as several key management positions still have not been filled and new procedures are still being developed. The Panel also understands that the current management issues within EM cannot be examined in a vacuum, but must be viewed in terms of where the organization was just a few years ago. EM is still dealing with the organizational turmoil discussed above. With that as a backdrop, this chapter examines the May 2006 reorganization—its implementation and subsequent modifications—and management practices within EM.

⁸ The Assistant Secretary is the only presidential appointee in EM. Except for three Schedule C appointees, all other positions are career civil servants.

⁹ To help the Panel as it considered the issues, it asked Assistant Secretary Rispoli to provide guidance in terms of his main strategies, goals, and principles against which the Panel could perform its analysis. The Assistant Secretary provided 13 precepts, which are included in Appendix A, Section IV, “Organizational Precepts.”

ORGANIZATIONAL PREMISE OF THE NEW STRUCTURE

Assistant Secretary Rispoli's organizational vision for EM is based on his Navy experience. In many parts of the military establishment, the organizational model is a straight line of responsibility and accountability from the Commanding Officer to the Executive Officer to the Chief Operations Officer. Adapting this model to EM, the May 2006 reorganization created a straight line of accountability from the Assistant Secretary to the Principal Deputy Assistant Secretary (PDAS) to the Chief Operating Officer (COO).¹⁰ Insofar as roles and responsibilities are concerned, the Assistant Secretary envisioned that the PDAS would be an alter ego, oversee the business/management side of the organization, and be responsible for developing the long-term strategic direction of the organization and its policies. The COO would be responsible for day-to-day operational oversight of EM sites and facilities. The managers of EM's site offices report to the COO.

ORGANIZATIONAL STRUCTURE

The May 2006 reorganization of EM headquarters created a matrix organization that houses most of the subject matter experts in offices reporting to the PDAS. Headed by Deputy Assistant Secretaries (DASs) are five such program offices. Two of the offices—Regulatory Compliance and Engineering and Technology—are technical programs. The other three—Program Planning and Budget; Human Capital and Business Services; and Acquisition and Project Management—are business/administrative programs. The reorganization also established an Office of Project Recovery reporting to the Assistant Secretary/PDAS.¹¹ The office was created to provide assistance to EM's troubled projects. Since its creation, the office has been working with the Waste Treatment and Immobilization Plant (WTP), a project managed by the Office of River Protection (ORP) at the Hanford Site in Richland, WA.

Reporting to the COO are two offices with subject matter experts—the Office for Safety Management and Operations and the Office of Safeguards and Security. In addition, an Office of Site Support and Small Projects¹² was created to manage field operations at EM's small sites and provide support to its large sites. To execute its operational responsibilities, the COO's office works with the other headquarters offices to address issues that range from engineering and technology to regulatory compliance and project management.¹³

¹⁰ At the October 2007 Panel meeting, EM leadership informed the Panel that the title "Chief Operating Officer" is being changed to "Chief Operations Officer." The new title is used in this report.

¹¹ In September 2007, EM leadership informed the Panel that it planned to realign this office under the COO. This is discussed below in the section, "The Office of Project Recovery."

¹² Plans underway to further reorganize the COO's office will split the Office of Site Support and Small Projects into two offices—the Office of Small Site Projects and the Office of Site Support. This is discussed below in the section, "Staff Capacity in the Office of the Chief Operations Officer."

¹³ A more detailed description of the May 2006 reorganization is found in Appendix A, Section I, "The 2006 Reorganization of EM Headquarters."

Additional Organizational Changes

At the Academy Panel's July 2007 meeting, Assistant Secretary Rispoli announced that additional organizational changes were being implemented, due in part to proposals made by the Academy Panel during the course of this study and recommendations from the EMAB.¹⁴ Major changes are discussed below.¹⁵

Creation of a Management Analysis Office

At the Panel's urging, EM has established an Office of Management Analysis and Process Management. In its September 2006 Observations Paper, the Panel noted that the Assistant Secretary did not have the management analysis capability on his staff to provide the analytic rigor needed to inform EM's management decisionmaking. For example, there was no organization the Assistant Secretary could task with developing a comprehensive plan that identified the actions needed to fully implement the reorganization. **The Panel proposed in its September 2006 paper that EM develop such a plan that included the completion of a functional analysis of its operations; the creation of standard operating procedures and program plans; and a review of delegations of authority.** EM did develop such a plan by detailing EM's Chief Safety Officer from Carlsbad to lead the effort. The Management Analysis and Process Management Office now has assumed responsibility for EM's action plan and for coordinating the organization's efforts to implement the Academy Panel's recommendations, as well as other recommendations from EMAB and the four EM working groups discussed in Chapter 1 that EM established during this study to identify improvement possibilities.

The Panel is pleased that EM has created the Office of Management Analysis and Process Management. Once properly staffed, this office can give EM a much needed capability to examine its management and business operations and to develop a policy issuance system. The Panel emphasizes that a critical role of this office should be identifying where organizational processes can be streamlined and simplified.

Establishing a Communications Office

In response to an EMAB recommendation, EM plans to establish an Office of Communications and External Affairs reporting to the Assistant Secretary. The new office will be responsible for developing EM's corporate message and preparing external communications, such as press releases; congressional testimony; pre-hearing questions and answers and answers to post-hearing questions; and speeches for the Assistant Secretary and PDAS.

Reorganizing EM's Human Capital and Human Resources Activities

EM also has reorganized the Office of Human Capital and Business Services. In the 2006 reorganization, human capital (HC) planning was in one office and human resources (HR) and information technology (IT) were combined in another office. This organizational split of HC and HR activities created opportunities for disconnects and inefficiencies when HC issues

¹⁴ EM is beginning to operate under the new structure even though it has not been formally approved or all the paperwork processed by DOE headquarters.

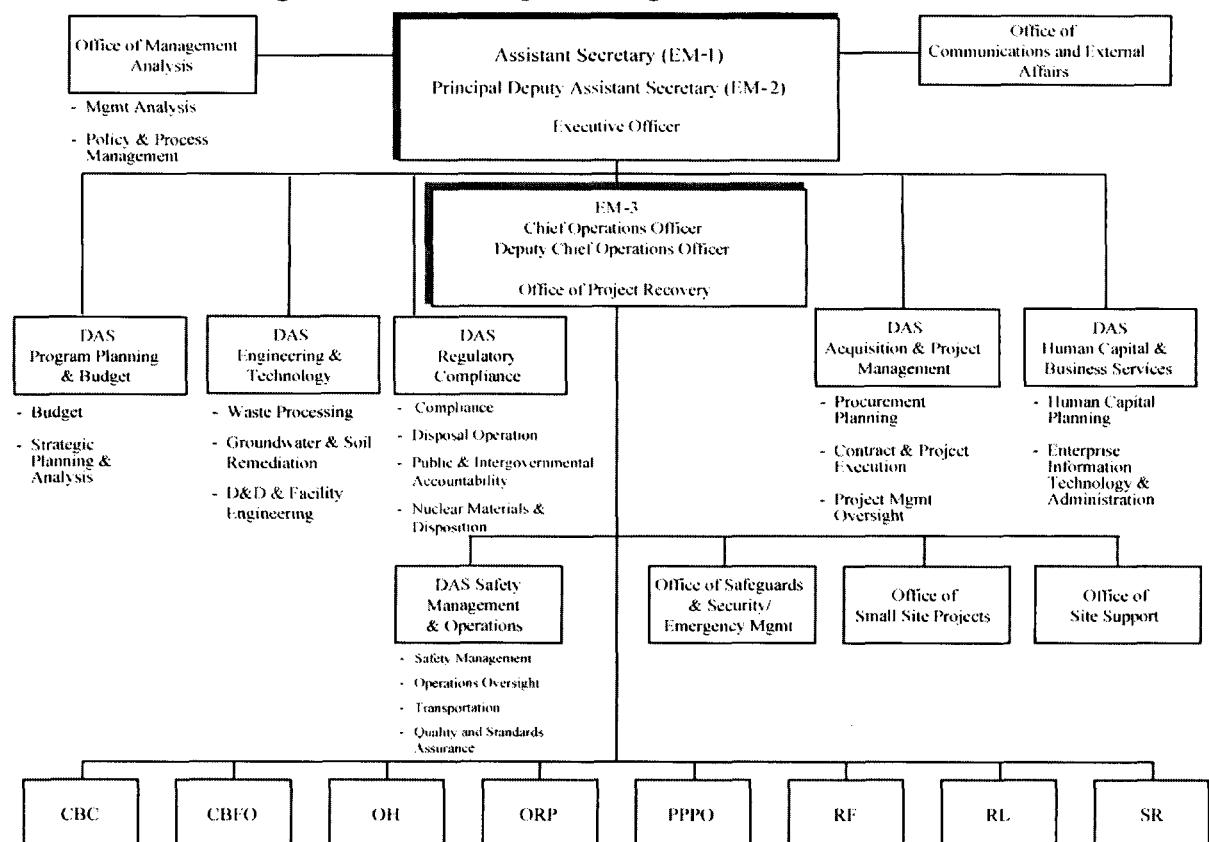
¹⁵ EM's proposed changes are discussed in more detail in Appendix A, Section V, "Additional Organizational Changes."

involved both a near-term tactical action and a long-term strategic component. The structure also created a situation where the director of the HR and IT office had to manage two very different areas that are both dynamic and often involve short deadlines and require a dedicated focus. Under the new configuration, the HC and HR functions have been consolidated into one office and there is a separate office for IT and cyber-security activities. This brings all HC/HR activities under the leadership of an HC professional and offers opportunities to streamline the work and enhance staff expertise. It also will allow EM to be more focused on cyber-security, which is receiving increased emphasis from both the Secretary of Energy and the Assistant Secretary. However, the Panel cautions that creating an office with cyber-security as a major function that is separate from the Office of Safeguards and Security and Emergency Management, which reports to the COO, may create some unintended overlap and duplication unless roles and responsibilities are well defined.

The Panel recommends that a task of EM's new Management Analysis and Process Management Office should be an analysis of the organizational options for EM's information technology and cyber-security functions.

EM also is taking steps to reorganize the COO's office based on Panel concerns, which are discussed below, about the capacity of that office to perform its mission. Figure 1 shows EM's organizational structure, including the proposed changes.

Figure 1: EM's Proposed Organizational Structure*



*Abbreviations include: Consolidated Business Center (CBC); Carlsbad Field Office (CBFO); Ohio Field Office (OH); Office of River Protection (ORP); Portsmouth/Paducah Project Office (PPPO); Rocky Flats (RF); Richland Operations Office (RL); Savannah River (SR)

STAFF CAPACITY IN THE OFFICE OF THE CHIEF OPERATIONS OFFICER

Throughout the course of this study, the Panel questioned whether the COO had the infrastructure in headquarters to effectively oversee EM's field operations. The COO and Deputy COO have often been involved with lower-level issues as opposed to troubleshooting and facilitating at a higher level and providing leadership and policy direction to the field. Although the COO has offices that oversee and help resolve problems related to safety and security, the COO has not had staff readily available who can address problems in other areas. As a result, the COO and Deputy COO have juggled competing demands on their time to attend meetings and make decisions. Many days, the COO and Deputy COO were double and triple booked to attend meetings that occurred at the same time. Exacerbating the problem was that the Deputy COO needed to spend time in the field to work through complex problems facing EM's projects. Doing so, however, added to an already difficult situation because it left the COO alone to attend the many meetings that required executive attention and decisions.

In its January 2007 Observations Paper, the Panel examined how the headquarters organizational structure was affecting the capacity of the COO's office to perform effectively. As discussed below, much of the work of EM's headquarters offices focuses on day-to-day operational matters. In particular, the functions performed by the offices of Regulatory Compliance and Engineering and Technology directly support EM's field operations. The Panel concluded that the COO should not have to coordinate with those functions. Rather, those functions should be part of the COO's organization and the managers of those offices should help the COO oversee field operations. **In its January 2007 Observations Paper, the Panel recommended that the Assistant Secretary realign the offices of Regulatory Compliance and Engineering and Technology to report to the COO.**

Both the Assistant Secretary and the PDAS were hesitant to make further substantial organizational changes so soon after the last reorganization, which is still in the process of being implemented. Although the Panel continued to observe capacity problems within the COO's office, in its August 2007 Observations Paper, the Panel concurred that it was too late in Assistant Secretary Rispoli's tenure to initiate a major reorganization, particularly given the fact that EM has not fully implemented the May 2006 reorganization. Instead, the Panel looked to less basic management changes that would address the shortcomings of the existing structure.

The Office of Site Support and Small Projects

The Panel found that a significant factor that has contributed to the COO's staff capacity dilemma is staff utilization, specifically, the utilization of the site liaisons who report to the director of the Office of Site Support and Small Projects.¹⁶ The site liaison position was designed to enhance the interface between EM headquarters and the field sites and, according to EM officials, the liaisons were to serve as staff to the COO. However, EM has struggled to define the site liaisons' role and how the liaisons are to operate within the organization. Their primary function has been to expedite actions the field needs from EM headquarters offices, i.e.,

¹⁶ A description of that office's responsibilities per the May 2006 reorganization is included in Appendix A, Section III, "The Office of Site Support and Small Projects."

they serve as action officers for critical decisions, congressional inquiries, Freedom of Information inquiries, etc.; helping the sites work through issues and walk action items and decision packages through headquarters. One site liaison reported that a continuing problem with their role is that the field does not fully understand it or how the liaisons can help the field. As a result, some liaisons do not believe that they have been well utilized, and some actively have sought other work to perform. On the other hand, staff at many sites reported that the liaisons generally lack the field experience and in-depth knowledge of site operations that are needed to help work issues through headquarters.

Exacerbating the problem is that the liaisons are located in Germantown, MD and not at the Forrestal Building in Washington, DC where most of the EM headquarters management and staff and DOE officials with whom the liaisons are to interface reside. This has diminished the liaisons' usefulness as they are not readily available to attend meetings and work through issues for the COO. Although phone and e-mail contact can be used effectively in many cases, senior leadership within the COO's office believe that the ability to walk down the hall and meet face-to-face with managers in the other headquarters offices is critical to resolving issues in a timely fashion. As a result, the COO and Deputy COO often absorbed the workload that should have been performed by the staff. The practice put a significant strain on the COO and Deputy COO, and had the unintended consequence of sub-optimizing delegations of authority and underutilizing these site liaison personnel.

In its August 2007 Observations Paper, the Panel proposed that the COO, in consultation with the Assistant Secretary and PDAS, define the work the COO's office must perform; determine the staff capacity needed to perform that work; assess the capabilities of the current COO staff to perform the work; and address any skill gaps through training and developing existing staff or adding additional resources to the office. The Panel suggested that the type and duration of the COO's staff field experience should depend on each staff member's job responsibilities, and the analysis also should include a review of staff location and assignments versus efficiency. EM leadership agreed with the Panel's assessment of the COO's office and has proposed changes to build its organizational capacity. The Office of Site Support and Small Projects is being split into two offices—the Office of Small Site Projects and the Office of Site Support. The Office of Small Site Projects will focus solely on managing EM's small sites. The Office of Site Support will provide support to EM's larger sites, i.e., Savannah River, the Richland Operations Office, the Office of River Protection, the Idaho Cleanup Project, Oak Ridge, the Carlsbad Field Office, and the Portsmouth/Paducah Project Office. Housed in the Forrestal Building, this office will be staffed with five to six senior program managers; two EJ-4s and four GS-15s. These individuals will be responsible for creating integrated teams, which include all of the functional areas in headquarters, to work site issues. EM leadership believes that these high-level resources will provide the COO with the capacity needed to respond to the sites' needs and address the complex issues that require headquarters assistance, and give the COO more time to perform the leadership role the position demands.¹⁷ The Panel supports this proposed reorganization and staffing for the COO's office.

¹⁷ The reorganization of the COO's office also includes a new Office of Quality and Standards Assurance, which is discussed in Chapter 4, Project Management, in the section, "Implementing Safety and Quality Assurance."

The Office of Project Recovery

In its August 2007 Observations Paper, the Panel raised several questions about the Office of Project Recovery.¹⁸ As noted above, the director and five senior-level staff have worked with the ORP staff to address the technical, financial, contractual, and project management issues that plagued the WTP project. By most accounts, the Office of Project Recovery has been instrumental in helping ORP resolve problems and finding a path forward for the troubled project. However, there are no formal procedures for how the Office of Project Recovery should interact with site managers and staff or a defined set of roles and responsibilities for each. The Panel found that the director of the Office Project Recovery assumed many of the responsibilities of a site manager for the WTP project. The acting ORP site manager often was not included in decisionmaking, yet is accountable for the project's success or failure—an unacceptable situation for any manager. There also are no criteria for when the Office of Project Recovery's assistance is no longer needed on a project. Once the office started working with the WTP, there was no exit strategy.

In its August 2007 Observations Paper, the Panel proposed that EM clearly define the Office of Project Recovery's roles and responsibilities vis-à-vis site management; develop standard operating procedures for how that office works with site management; and develop criteria for when that office is brought in to assist a project and when its assistance is no longer required. Also, believing that the resources of the Office of Project Recovery could be better utilized to build organizational capacity in the COO's office to assist troubled projects other than just WTP, **the Panel proposed that that EM realign the Office of Project Recovery under the COO.** As part of the reorganization of the COO's office, EM is realigning the Office of Project Recovery under the COO. For now, it will remain a separate office reporting into the COO in order to provide a visible focus on the WTP.

The Panel is encouraged by the organizational changes being implemented to build the capacity of the COO's office. A primary driver for the Academy's study of the EM Program was congressional concerns about the cost increases and schedule delays of EM's projects. The Panel believes that if EM is to successfully deal with these issues, the COO, who is responsible and accountable for EM's operations, must have the proper number of headquarters staff with the appropriate knowledge, skills, and credibility within the organization to help fulfill those responsibilities. The next critical step, however, is to ensure that roles and responsibilities for staff throughout the organization are clear.

ORGANIZATIONAL ROLES AND RESPONSIBILITIES

A major issue that the Panel raised throughout the course of this study is that roles and responsibilities in headquarters have not been clearly defined and executed. The Panel found that EM has not functioned according to the Assistant Secretary's organizational model. As opposed to concentrating on the long-range, strategic direction of the organization, much of the

¹⁸ Additional information on the Office of Project Recovery is included in Appendix A, Section VI, "The Office of Project Recovery."

work of EM's headquarters offices still focuses on day-to-day operational matters. The Regulatory Compliance office regularly deals with the sites on day-to-day regulatory issues. An estimated 40 percent of the Project Management Oversight staff's time is spent working with the COO's office to support operations. According to EM's *Mission and Functions Statement*, providing technical assistance and oversight to EM are primary functions of EM's headquarters offices. So it is not surprising that they are involved in day-to-day activities.

Likewise, the COO's activities are not confined to day-to-day operations. The COO often is consulted on long-term policy and strategy issues, which the Panel believes is an appropriate role for the COO. Occasionally, DOE leadership or stakeholders ask the COO to get involved with issues that fall outside of the COO's direct area of responsibility, e.g., a Governor asks that the COO be involved in negotiating a regulatory agreement with the state. In those instances, the COO usually would comply.

The Roles of the PDAS and the COO

Confusion about roles and responsibilities starts at the top of the organization. Throughout this project, EM staff throughout the complex commented that they were confused about the role of the PDAS versus the role of the COO. With the COO reporting to the PDAS, the latter is in the direct chain of command for operations, which sometimes has led to mixed messages from top leadership down through the organization.

The Panel found that the PDAS often assumed the role of a second COO as opposed to focusing on EM's business/management functions as envisioned in Assistant Secretary Rispoli's organizational model. The Panel believes that the PDAS' supervisory responsibility for the Regulatory Compliance and Engineering and Technology offices redirected the PDAS' attention away from EM's business/management functions and into more operational types of activities. In addition, the PDAS' leadership role for a DOE-wide committee dealing with nuclear materials consolidation also pulled the PDAS away from his business/management responsibilities and into the operational arena.¹⁹ At the same time, in part due to capacity issues within the COO's office (discussed above), the COO was operating more like a project director or site manager than a COO. The COO and Deputy COO have been heavily involved with day-to-day operational issues at a level that one would not normally expect of senior headquarters executives.

Many people interviewed throughout EM as well as external stakeholders believe that the PDAS and COO have micromanaged the field. They reported that the PDAS and COO often got involved in issues that should be the responsibility of lower-level management. The PDAS and COO both are perceived as being very technically-oriented and technically-competent individuals, which some EM staff believe has driven their involvement with lower-level issues. However, with over 40 Senior Executive Service (SES) positions in headquarters and the field, the Panel thinks that most decisions in EM should be made below the PDAS and COO level.

¹⁹ The House is proposing in its Appropriations Bill that nuclear materials activities for the entire Department be consolidated into a new DOE office.

In the January 2007 Observations Paper and again in the August 2007 Observations Paper, the Panel proposed that the Assistant Secretary work with the PDAS and COO to define their roles and responsibilities and to take the appropriate steps to ensure that his expectations are being met. The Assistant Secretary met several times with the PDAS and the COO to try to clarify their respective roles; reiterating that the PDAS is in charge of EM's business and management activities and the COO is in charge of operations. On paper, there is a differentiation, however, it has not been as clear in practice.

Newly announced changes in EM's leadership, as well as the organizational changes in the COO's office discussed above, offer a new opportunity to clarify the roles of the PDAS and COO. The PDAS is retiring and the COO will be assuming that position. The Director of the Office of Project Recovery has been designated as the new COO. Although not yet officially in those positions, they are already working together to sort through their respective roles.

The Panel is encouraged by the attention the designees are focusing on the roles and responsibilities of their new positions. It believes that the change in leadership offers a unique opportunity to start anew to ensure that the Assistant Secretary's organizational model is implemented. To do so, the PDAS and COO designees will need to ensure that the PDAS stays focused on the business and management aspects of the organization and that the COO focuses on facilitating, troubleshooting, leading, and monitoring—not managing—the field. It is the COO's primary responsibility to strengthen the sites so they can better manage themselves. To ensure that the organizational model underlying the May 2006 reorganization is implemented, the Panel believes that the Assistant Secretary must be an active participant in the PDAS and COO designees' efforts to define their roles in order to ensure that the results are in accordance with his vision of how the organization should operate.

The Panel recommends that the Assistant Secretary actively work with the newly designated Principal Deputy Assistant Secretary and Chief Operations Officer to define their roles and responsibilities and devise a means other than the annual performance review to periodically assess how they are carrying them out.

The Role of Headquarters Offices

The work to accomplish EM's mission is performed at field sites across the country. However, the Panel recognizes that for the field to succeed, EM must have an effective headquarters organization. The role of headquarters is to create a vision for the organization; develop policies and guidance to help achieve that vision; provide the necessary technical assistance to the field; “clear the underbrush” for the field by taking actions that enable and facilitate the field's ability to accomplish EM's mission; and perform oversight to ensure that the organization is fulfilling its mission.

The lack of clear roles and responsibilities within headquarters and between headquarters and the field also has been a recurring issue throughout this study. Field staff often viewed actions taken by headquarters offices to review/concur on activities or, in some cases, to overturn decisions

made in the field as line rather than staff office responsibilities, and the field interpreted these headquarters actions as micromanaging the field.

Headquarters staff indicated that they have had difficulty separating their staff functions from line operations. For example, headquarters officials in the Engineering and Technology and Regulatory Compliance offices indicated that their offices do sometimes direct work in the field because they are trying to “leverage directed programs to multiple sites.” However, many operational issues involve multiple headquarters functions—regulatory, technology, safety, acquisition/project management, budget, etc. The Panel found that EM has not integrated the many program requirements that guide EM’s cleanup efforts in such a way that defines how to most efficiently address those cross-cutting issues, and has not defined the respective roles of the participants or designated who has the lead for taking action. As a result, field staff reported that it was not unusual to receive requests from several people from different headquarters offices—each asking for information or directing activities that dealt with the same issue but from a different functional or programmatic perspective. The field often has been faced with addressing these multiple requests without being given a context for the requests and how what they have been asked to do fits into a broader issue. As a result, numerous field staff indicated that they felt like they work not just for the COO, but “for everyone in headquarters.” Many field staff reported that their ability to be out walking the project site, which is a critical aspect of project oversight, was adversely affected by the amount of time they spent in the office responding to headquarters’ requests. A Defense Nuclear Facilities Safety Board report on Savannah River sent to Secretary Bodman in August 2006 raised questions about that site’s ability to implement a more ambitious technical assessment plan prepared by the Nuclear Materials Stabilization Project because of the time staff devoted to such requests.

The Panel addressed this issue in its January 2007 Observations Paper by proposing that the COO develop a tracking and control system to manage requests for information/actions made to field sites. The COO developed a system that required headquarters offices to report to the COO’s office any task for the field that required more than four hours, but the system does not appear to be working effectively. During their visit to the Hanford Site in April, Academy staff were struck by the intensity with which both the Richland Operations Office and ORP staffs spoke about this issue. The problems with Hanford’s projects are well known. Thus, it is understandable that headquarters believes that it needs to be more familiar and involved with the work taking place. However, Academy staff heard repeatedly from ORP and Richland managers how they are barraged from headquarters with requests for information and other requirements. One official noted that sometimes the number of calls he received, even on relatively minor issues, were so numerous that they prevented him from taking timely action to resolve the problems. Another manager indicated that he often was unable to plan his own workload because of headquarters involvement in his operations. The requests from headquarters, not the needs of his organization, dictated how he spent his time. **In its August 2007 Observations Paper, the Panel proposed that the COO work with the Hanford site offices’ leadership to gain a full understanding of headquarters interactions with those offices and the impact headquarters’ requests/requirements are having on the site offices’ ability to manage their work, and to develop a proposal to address the issues identified.**

The COO intends to discuss with the field how the tracking and control system is working and to address identified problems. Academy staff also discussed with the COO that one problem may be that the system is too subjective with respect to determining how long a task will take, and have suggested that someone other than the requester determine the level of effort required to perform the work. As a result, the COO plans to have the senior program managers²⁰ in the COO's Office of Site Support assess the level of effort required to provide other headquarters offices with the information requested.

The Panel also found that requests to EM's field sites do not originate just from within EM. Staff reported that requests for information from outside of EM often are more burdensome than requests from EM headquarters. For example, one site reported receiving five requests a day for information from the DOE Office of Engineering and Construction Management (OECM), which manages a monthly scorecard system for DOE projects managed under DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*.²¹

The Panel recommends that the Chief Operations Officer develop a mechanism to track and control requests for information/action made to field sites from organizations external to EM.

Efforts to Define Organizational Roles and Responsibilities

As noted in the Introduction to this report, EM created a Roles, Responsibilities, Authorities, and Accountabilities (R2A2) Working Group. The group's charter was to develop a plan of action that addressed issues associated with R2A2s within EM headquarters; between headquarters and field sites; and among field sites (on a case-by-case basis). For several months, the Working Group's efforts focused on examining the R2A2s of EM headquarters offices; identifying conflicts, the need for clarification, and gaps; updating existing systems, such as EM's Functions, Responsibilities and Authorities and Integrated Safety Management System descriptions to reflect the current reorganization; identifying where standard operating procedures were needed or needed to be updated; and developing a responsibilities and accountability matrix. The end product is to be an EM headquarters operational manual that implements and institutionalizes the R2A2s.

Academy staff received some preliminary information from the R2A2 Working Group on the gaps, conflicts, and areas that need clarification. These data were compiled using information provided by both headquarters and field staff. Several of the issues identified mirror areas of concern raised by the Panel, such as headquarters micromanagement of field sites; the role of site liaisons; headquarters tasking of the field; and the R2A2s of the Office of Project Recovery. To date, the Working Group's efforts have documented how work is currently being conducted in EM and has not attempted to assess how roles and responsibilities conform to Assistant Secretary

²⁰ These new positions are discussed above in the section, "Staff Capacity in the Office of the Chief Operations Officer."

²¹ Order 413.3A and OECM's rating system are discussed in the Project Management chapter in the section, "EM Headquarters Oversight of Project Performance."

Rispoli's organizational vision.²² In its August Observations Paper, the Panel proposed that the Assistant Secretary ensure that the work of the Roles, Responsibilities, Authorities, and Accountabilities Working Group is consistent with his organizational model of how EM should function within the existing structure.

EM agreed that it will need to revise the Group's work to reflect the organizational changes being implemented. However, with the establishment of the Management Analysis and Process Management Office, it transferred the remaining work of the R2A2 Working Group to that office. While the Panel agrees that the R2A2 work is a logical responsibility of a management analysis office, the new office is not yet adequately staffed to assume responsibility for the work that still needs to be done. At present, the office's staffing consists of a director and five individuals on detail.²³ The Panel believes that until the Management Analysis and Process Management Office is adequately staffed, EM needs to capitalize on the in-depth subject-matter knowledge already acquired by the core members of the Working Group in order to conclude the work in a timely fashion.

EM'S FIELD STRUCTURE AND SITE MANAGEMENT

EM carries out its cleanup responsibilities through a large field office structure that is centered around the sites of the former weapons complex. The eight field offices reporting to the COO, shown in Figure 1, are "owned" by EM, i.e., EM has landlord responsibilities at these sites and is responsible for all aspect of site operations.

EM also has ongoing cleanup activities at several other sites where it is part of a multi-organizational operation and is not the lead secretarial office. Included among these are two large sites—the Oak Ridge Operations Office (owned by the Office of Science) and the Idaho Operations Office (owned by the Office of Nuclear Energy)—and several small sites, such as the Brookhaven National Laboratory (owned by the Office of Science). At these sites, EM is responsible only for its specific cleanup activities and does not have "landlord" responsibilities. EM gets its administrative support (procurement, personnel, etc.) from the landlord organizations. The EM staff at these sites also receive significant subject matter expertise in areas such as safety, including safety basis, nuclear safety, fire safety, and industrial hygiene. Generally, EM staff were generally complimentary of the support they have received from their landlord organizations, and there was universal agreement that the EM operations at those sites do not have the resources to provide that level of service for themselves.

A unique subset of the non EM-owned small sites are those owned by the National Nuclear Security Administration (NNSA), which include sites such as the Los Alamos National

²² Assistant Secretary Rispoli's vision would have the COO focus on day-to-day operations and the other headquarters offices focus on complex-wide, longer-term strategies, policies and plans, and complex-wide issues; not duplicate field functions. With regard to the Engineering and Technology Office, his vision would establish that office as a world-class source of engineering expertise, providing such expertise for Source Evaluation Boards and developing new technologies needed for the future.

²³ The office has received approval to add three more people.

Laboratory, the Nevada Site Office, and the Lawrence Livermore National Laboratory. Because of the legislation that created NNSA, no one other than an NNSA official may direct an NNSA employee, contractor, or any operation at an NNSA site. The staff performing the EM work are both NNSA employees and EM employees supervised by NNSA staff, and NNSA hires the contractors to perform the work. The NNSA headquarters office of the Associate Administrator for Infrastructure and Environment oversees the EM cleanup operations at NNSA sites. EM receives reports on the status of the work at these sites, but is not responsible for directly overseeing the work.

The Panel found a long-standing issue concerning the supervision of the staff working on EM projects at NNSA sites.²⁴ There also have been other, more general management issues related to how EM and the NNSA sites work together. In particular, the Panel heard conflicting reports on communication practices between the NNSA sites and EM. According to NNSA headquarters officials, the EM programs at its sites can communicate directly with EM as long as they inform NNSA headquarters of those interactions. That appears to be how it has worked in practice at the Nevada Site Office. However, at Los Alamos, staff have been operating under the premise that if they needed to contact EM for any reason, they had to go through NNSA headquarters, who would then make the appropriate entreaties to EM. EM's senior leaders reported that they have been criticized by NNSA for having made direct contact with employees working on EM cleanup operations at NNSA sites. They also expressed concerns about not having adequate information about what is happening at the NNSA sites. EM and NNSA have now signed a protocol which, among other things, states that, "while there may be disagreements among these offices, nothing in the NNSA Act or this management protocol prevents communication and cooperation, or excuses failures in these areas." Although this language is useful, the Panel believes that it does not sufficiently clarify communications practices between EM and NNSA.

With respect to managing cleanup activities, there is no single model for how the sites are structured. Oak Ridge's structure is built around its major projects. It has offices for the Melton Valley Closure Project, the East Tennessee Technology Park Closure Project, and the Balance of Reservation Closure Project. Likewise, Hanford's Office of River Protection has offices for each of its two major projects—Tank Farms and WTP. The Idaho Cleanup Project (ICP) and Savannah River are organized more along the lines of cleanup activity type. ICP has an office for Waste Disposition and another for Facility Material Disposition; Savannah River has offices of Nuclear Material Stabilization, Waste Disposition, and Closure. The organizational structure of Hanford's Richland Operations Office is somewhat based on geography. Two of its major project offices are River Corridor and Central Plateau. Their responsibilities correspond to the activities taking place at those locations on the site.

Sites also have different approaches to how they provide their projects with subject matter experts, such as facility representatives and safety, quality assurance, and project controls experts. Some sites have staff with those capabilities embedded within their various project teams. Others have created separate offices with subject matter experts that are responsible for providing assistance in a matrix fashion to all projects. It does not appear that these differences

²⁴ This subject is discussed in Chapter 5, Human Capital Management, in the section, "EM's Human Capital/Human Resources Service Delivery Configuration."

in organizational structure have caused any significant issues for the organization. Organizational responsibilities are generally well-defined at the sites, and people tend to know who their counterparts are at other site offices, and they seek advice and/or assistance when needed. The one problem that these structural differences exacerbate, however, is the ability to adequately assess staffing requests from the various offices. EM does not have a resource estimation system tied to workload.²⁵ Without such a system, it is difficult to weigh resource requests when they are coming from similar organizations. The challenge of balancing staff needs is further compounded when the requesting offices are structured differently.

The Hanford Site is unique in that it has two EM site offices—the Richland Operations Office and ORP—responsible for projects at the site.²⁶ Having two site offices at Hanford has had both advantages and disadvantages. Staff report that an advantage has been the increased management focus and resources for the site's troubled tank retrieval efforts. On the downside, however, is that the working relationship between the sites has been dependent largely on the leadership of those organizations, and that relationship has not always been productive. Several EM staff and a Tribal representative also noted that there have been problems integrating activities at the site. A key example has been in the area of soils and groundwater. Another issue associated with having two site offices is staff utilization. With the number of resources being limited across the EM complex, compounded by the difficulty of finding certain expertise like seismic and fire protection engineers, there is a case to be made for centralizing such expertise in one of the two Hanford offices to help leverage those scarce resources to better meet the workload requirements of all the site's projects and to help standardize the approaches to those activities across the site.

When Academy staff asked site staff the question of whether there should be one or two offices at Hanford, the majority responded that there should be only one; it was just a matter of timing. Some staff believed there needed to be two offices until the WTP was in an operational mode; others believed the work could be done more effectively if there were one office now. There were some staff, however, who believed that there always should be two offices at the Hanford Site.

In its August 2007 Observations Paper, the Panel proposed that EM develop a plan to consolidate the soils and groundwater activities at the Hanford Site. EM has indicated that it is moving forward to implement the Panel's proposal. The Panel also proposed that EM examine the organizational alignment of its subject matter experts (facility representatives, safety, quality assurance, etc.) at the site to determine whether centralizing those functions into a single office serving both site offices would provide more efficient and effective

²⁵ This subject is discussed in Chapter 5, Human Capital Management, in the section, "Workload Forecasting."

²⁶ Until 1998, the Richland Operations Office managed all activities at the Hanford Site. In 1998, Congress carved out the Hanford tank waste retrieval efforts from the Richland Operations Office and gave responsibility for those projects to a new, autonomous office—the Office of River Protection. Both site office managers report to the COO. In December 2002, the managers of ORP, the Richland Operations Office, and the Assistant Secretary of EM signed a memorandum of agreement outlining the authorities of each office and how they are to coordinate those authorities. In September 2003, the managers of ORP and the Richland Operations Office extended that memorandum of agreement.

services. Finally, the Panel proposed that EM begin to develop a long-range plan to combine the operations of the two Hanford site offices.

At the July 2007 Panel meeting, EM leadership expressed interest in these Panel proposals, but viewed them as things to consider in the future. Subsequently, the Panel learned that EM hired a contractor to provide additional subject matter expertise to both site offices. The Panel believes that this reinforces the need for EM to examine how it performs this work across the entire Hanford Site in order to promote consistent operations. The Panel also believes that EM needs to begin now to plan for combining the two Hanford site offices as this effort will take a significant amount of time.

The Panel recommends that EM examine the organizational alignment of the subject matter experts at the Hanford Site to determine whether centralizing those functions into a single office serving both site offices would provide more efficient and effective services. The Panel also recommends that EM begin now to develop a long-range plan to combine the operations of the two Hanford site offices.

EM'S MISSION SUPPORT FUNCTIONS

Like any organization, EM needs the services of mission support specialists to execute its mission, including contracts and procurement, human capital, finance, budgeting, information technology, and logistical support. As noted earlier, the offices responsible for all of the mission support functions performed in EM headquarters report to the PDAS. Early on in this study, the Panel expressed concerns about the lack of senior leadership focus on EM's business and management functions. As will be discussed later in this report, EM has had significant acquisition and human capital issues that need to be addressed. To resolve them requires leadership that is focused on integrating EM's planning, budgeting, human capital, and acquisition functions. As noted above, the PDAS has been very involved in the operational activities of the organization, which has distracted him from the critical responsibility of overseeing the business/management side of the organization. **In its September 2006 Observations Paper, the Panel proposed that EM create a Chief Business Officer position, filled with a term appointment, to lead and oversee EM's mission support DAS offices. Once EM fully implemented the reorganization, the Assistant Secretary could determine whether to retain the position as a term appointment, make it permanent, or abolish it.**

The Assistant Secretary decided not to adopt the Panel's proposal. And in its January 2007 and August 2007 Observations Papers, the Panel continued to raise concerns about the management of the business/management side of the house. Although still a concern, the Panel understands the Assistant Secretary's reluctance to modify his organizational vision and make major organizational changes. However, with an annual budget of nearly \$6 billion, the Panel emphasizes the need for senior leadership focus on EM's financial and other business/management functions. The Panel notes that the upcoming personnel change in the PDAS position offers the Assistant Secretary an opportunity to ensure that the business/management functions of the organization are a top priority for the new PDAS. And

EM leadership has assured the Panel that this will be the case. However, the Panel believes that it is critical that the Assistant Secretary adopt the Panel's recommendation in the section of this chapter, "The Roles of the PDAS and the COO," that the Assistant Secretary stay actively involved in the new PDAS' and COO's efforts to define their roles.

Mission Support in the Field

As noted above in the section on site management, EM operations at non EM-owned sites, such as the ICP and Oak Ridge, rely on the landlord organization for mission support services. Mission support offices for the EM-owned sites are scattered throughout the complex. Two of the large EM-owned sites, Savannah River and the Richland Operations Office, have their own mission support offices and are largely self-sufficient. ORP has its own acquisition staff and relies on the Richland Operations Office for its other administrative support. The Carlsbad Field Office and the Portsmouth/Paducah Project Office have staff to perform some mission support activities and rely on the EM Consolidated Business Center (EMCBC) for others.

In 2004, EM established the EMCBC to support the five Ohio Field Office closure sites and the Rocky Flats Closure Project. Its mission was to provide the full range of support services to those offices including human capital, financial, legal, contracting, logistics, and IT support. The EMCBC also has an Office of Technical Services consisting of a cadre that was established to retain technical staff from closure sites who could provide expertise to other sites.²⁷

In its September 2006 Observations Paper, the Panel proposed that EM clearly define the long-term mission of the EMCBC and the support it should provide throughout the complex. The Panel found that there was ambiguity surrounding the future of the EMCBC because its major customers were closing down. EM headquarters leadership appeared to pay little attention to how the EMCBC operated and the issues facing it. Since then, as a result of the Panel's proposal, EM leadership announced a long-term vision for the EMCBC and has taken steps to define its role across the complex. The EMCBC formed integrated project teams to visit each site to better determine their needs and has created a matrix of primary and support services that it will provide to all EM headquarters and field sites. It also has developed service level agreements with the EM small sites that it supports.

COMMUNICATIONS

Communications is a broad and complex subject that encompasses both an organization's internal and external communication systems and practices. Like any organization, EM managers hold regular meetings with their staffs to share information and discuss issues. In general, EM staff reported that communications within the organization have improved significantly since the arrival of Assistant Secretary Rispoli. From the Assistant Secretary down to the office directors in headquarters and assistant managers at the sites, staff meetings abound. The organization is embracing a more open environment where information is shared more freely. As Academy staff traveled around the complex, however, staff in headquarters and the field raised issues with the quality and quantity of information exchanged at meetings. These

²⁷ The cadre is discussed in Chapter 5, Human Capital Management, in the section, "EMCBC Closure Cadre."

concerns were often related to the ability and/or propensity of their direct supervisors to communicate.²⁸

EM's activities require it to work and communicate with local communities, states, tribal nations, and regulators on an ongoing basis. The sites have primary responsibility for these interactions. Academy staff interviews with EM stakeholders in DC and across the complex elicited mixed reactions from stakeholders on their communications with EM. In some cases, the local community, state, and other stakeholders enjoyed a close working relationship with the site and believed they were kept informed and appropriately involved in decisionmaking. In other instances, the relationship and the adequacy of communications were much less positive.

Assistant Secretary Rispoli has been actively involved with EM's external partners. He regularly attends the semi-annual EMAB meetings and annual meetings of the State and Tribal Governmental Working Groups and Site-Specific Advisory Board chairs. When traveling to the field, the Assistant Secretary often has met with Tribes/Pueblos and stakeholders in the community. Interviews with Tribes/Pueblos and EM's stakeholder community indicated that Secretary Rispoli's efforts to meet with them are appreciated and the exchanges have been helpful. However, their contact with him can only be infrequent, and several have indicated that some means of having more direct communication with EM headquarters with respect to decisions being made and issues facing the EM Program would be of value.

As noted in the Panel's January 2007 Observations Paper, there is no headquarters office responsible for corporate communications and outreach with the Tribes/Pueblos and community stakeholders. The Office of Public and Intergovernmental Accountability, which reports to the DAS for Regulatory Compliance, coordinates EM's interactions with intergovernmental groups and advisory boards.²⁹ But it has no outreach responsibilities to provide a unified EM message to all of the Tribes and EM's stakeholder community. The latest information available to the Panel with respect to the new Office of Communications and External Affairs does not specify such a role for that office. The Panel believes that EM would benefit from such a headquarters outreach function, but notes that field program personnel need to be involved with such an activity.

The Panel recommends that EM expand the role of the Office of Public and Intergovernmental Accountability to include working cooperatively with field program personnel to develop a corporate communications and outreach program with the Tribes/Pueblos and community stakeholders; work with the Tribes/Pueblos and community stakeholders to develop standard operating procedures for how the office should carry out those

²⁸ Communication will be one of the subjects addressed by the leadership training program EM is developing for current and future leaders/managers, partially in response to EM staff responses to the Office of Personnel Management's 2006 Federal Human Capital Survey, which is discussed in Chapter 5, Human Capital Management, in the section, "Workforce Environment and Diversity."

²⁹ Many of the interactions between EM and the Tribes and states revolve around regulatory and other compliance agreements between the parties. According to EM officials, the placement of the Office of Public and Intergovernmental Accountability within the Office of Regulatory Compliance has been helpful to bring issues before EM senior officials who are in the best position to address Tribal and stakeholder concerns.

responsibilities; and inform the Tribes/Pueblos and community stakeholders accordingly.

DEFINING A PATH FORWARD

Throughout this study, the Panel has raised concerns about EM's organizational structure, which is based on a military model. In the Panel's experience, the critical factors that make the model successful in the military—staff and leaders experiencing the same training and mentoring and coming from a similar organizational culture—do not exist in civilian agencies. The lack of similar experiences and training works against the military model in a civilian setting. Although the Panel agrees that Assistant Secretary Rispoli should not undertake another reorganization at this time, the Panel believes that EM should be reorganized at some point in the future. Future leadership should examine the merits of different organizational models. Any such effort should strive to identify structures that minimize rigidity and the likelihood of infighting and tension; maximize cooperation and operational nimbleness; and encourage innovation.

The Panel is pleased to note that EM leadership is committed to improving how the organization functions. EM has hired a contractor to work with the Management Analysis and Process Management Office to develop a path forward that integrates its management improvement efforts in an organized, systematic fashion. The EM Management Initiative (EM-MI) is what EM has defined as a business model designed to help the organization accomplish its mission through clearly defined roles and responsibilities in headquarters and the field; disciplined systems and processes; useful tools and job aids; and a management approach that emphasizes results. Its four key components consist of:

- (1) an EM Strategic Management System, which will integrate and systematize EM's planning; budget formulation; program implementation; and analysis and evaluation activities
- (2) an EM Program Management Guide and Program Management Manual
- (3) EM program management training
- (4) an EM workforce analysis

As part of this initiative, EM will be examining how it defines its programs and the appropriate roles of headquarters and the field to carry them out. The work of the R2A2 Working Group will serve as a useful starting point for this effort. The program management planning effort will then drive a workforce planning effort. The Panel is optimistic that this systematic approach will provide an organizational logic to drive and inform the numerous management improvement actions EM currently has underway. It thinks that this effort also can be a foundation for EM to build upon to engage in continuous management improvement activities. However, in order to manage an effort as large as the EM-MI and to institutionalize an ongoing management improvement process, EM needs a mechanism to prioritize and monitor management initiatives that:

- clearly identifies the major areas for improvement
- outlines the actions that need to be taken
- identifies the person(s) responsible for the improvement areas and individual actions
- establishes a timetable for completing all actions
- defines success measures/evidence of completion

The Panel recommends that as part of the EM Management Initiative, EM institutionalize a management action planning process that can guide the organization through this and all future management improvement activities.

CHAPTER 3

ACQUISITION

EM's work, which is technically challenging and fraught with uncertainties, is accomplished principally through the use of contractors.³⁰ In the past, EM has struggled to establish the acquisition infrastructure, tools, and discipline that one would reasonably expect to find in an organization so dependent upon the success of its contractors. The Academy Panel's examination of EM's acquisition operations coincided with significant acquisition reform efforts already underway in EM that were designed to address identified shortcomings. Prior to the Academy's study, Assistant Secretary Rispoli appointed a DAS for Acquisition and Project Management, which signaled his intention that acquisition would be taken much more seriously than in the past. The DAS, in turn, has developed an EM Acquisition Center concept, which will significantly change how EM handles its major acquisitions.³¹

During the last 19 months, the Academy Panel and staff have worked with EM senior management on an interactive basis to understand the issues and provide advice concerning EM's efforts to reshape its acquisition environment. The Panel made several proposals on a variety of subjects, including the Acquisition Center concept, the DOE business clearance review process, EM's capacity to process major procurements, and contracting mechanisms, all of which EM has been quick to adopt. This chapter discusses the issues EM faced in its acquisition operations and its new Acquisition Center concept; summarizes and updates the major observations and proposals that the Panel presented in its three Observations Papers;³² and reports on the actions EM has taken to respond to the Panel's proposals.³³ It also addresses two areas not dealt with in the previous papers—EM small business contracting initiatives and contract administration.

EM'S ACQUISITION OFFICES

The overwhelming proportion of EM's acquisition needs involve cleanup and remediation efforts at EM field sites. The preponderance of contract placement and administration activities associated with these highly complex contracts are performed by contracting staff located at EM's site offices. EM's three largest sites—the Richland Operations Office, the Office of River Protection (ORP), and Savannah River—have their own contracting staffs. In 2004, EM established the EMCBC in Cincinnati, Ohio to provide EM's smaller sites with a full range of business support services, including acquisition. The EMCBC also provides some acquisition

³⁰ For additional information on EM's acquisition profile, see Appendix B, Section I, "Overview of Environmental Management Acquisition."

³¹Until recently, the EM Acquisition Center was referred to as the "acquisition machine." It is defined as "an integrated business system for managing major EM acquisitions efficiently and effectively using standardized and repeatable business process." This involves dedicated staffing and leadership to ensure the timely planning, solicitation, source selection, and award of EM's major acquisitions.

³² Some of the more detailed information from those papers is included in Appendix B.

³³ Attachment 1 provides the status of EM's efforts to address all of proposals made by the Panel in its three Observations Papers.

assistance to the Carlsbad Field Office and Portsmouth/Paducah Project Office, which have warranted contracting staff to deal with procurements. EM also relies on DOE operations offices (e.g., Idaho and Oak Ridge) that are owned by other DOE program offices to provide acquisition services at non EM-owned sites.

ACQUISITION ISSUES FACING EM

Among the problems facing EM is that major acquisitions occur infrequently (every five years or more). Therefore, site staff lack familiarity with source selection processes, and there has been little expertise in EM headquarters to help facilitate these complex actions. In addition, site staff must spend time away from their critical day-to-day responsibilities to participate in these processes.

In addition to these internal challenges, EM has had to address issues with Departmental acquisition practices, which in general—and as they relate to EM contracts in particular—have drawn severe criticism by GAO and others. All DOE acquisitions are subject to a dollar threshold for applying DOE headquarters' business clearance requirements—a process where the Office of Procurement and Assistance Management (OPAM) and the Office of General Counsel review documents generated during the course of large procurements.³⁴ Until recently, for EM that threshold was \$5 million.³⁵ With an average dollar size of each action reaching \$17.8 million in FY 2006, 25 percent of the new awards and 48 percent of other actions that OPAM reviewed were EM actions. EM staff reported significant delays in obtaining the required DOE headquarters reviews and approvals, which have been a major frustration both to EM officials and to contractors. DOE headquarters officials agreed that the business clearance process takes too long, but DOE and EM staffs do not share a common understanding of the cause of these delays.

THE EM ACQUISITION CENTER

The DAS for Acquisition and Project Management is addressing concerns about EM's acquisition activities by creating an EM Acquisition Center for major acquisitions that combines a centralized capability with an integrated project team approach to:

- develop acquisition plans
- expedite and facilitate the review of EM procurements by DOE headquarters
- perform source selection responsibilities
- perform contract placement responsibilities

³⁴ These include, among other things, the acquisition plan, the proposed solicitation, the competitive range determination, and the source selection decision.

³⁵ DOE increased some thresholds in May 2007. This subject is discussed further in the section of this chapter, "DOE Headquarters Business Clearance Review Process."

The Acquisition Center concept places responsibility for acquisition planning in EM's Office of Procurement Planning. That office will take the lead to develop an overall EM acquisition strategy and site- and project-specific acquisition and contract strategies.³⁶ However, field offices will be integrally involved throughout the process. The concept also creates in the Office of Procurement Planning a liaison function responsible for expediting/facilitating the DOE headquarters business clearance review process. It is anticipated that centralizing the planning and liaison functions in EM headquarters will lead to a more timely and effective execution of EM's procurement strategy and fewer delays in the OPAM/General Counsel business clearance review due to the proximity of these functions to DOE headquarters.

In the January 2007 Observations Paper, the Panel proposed that EM examine the acquisition and planning policies and practices of the Naval Facilities Engineering Command (NAVFAC) as part of an action plan to improve EM's acquisition planning and execution. The Panel believed that EM could benefit from exploring NAVFAC's:

- lessons learned in the acquisition of environmental management services
- use of indefinite quantity contracts
- templates used to support the acquisition planning and source selection processes
- Business Management System

Subsequently, senior EM headquarters acquisition staff and an acquisition support contractor interviewed NAVFAC personnel, and EM plans to incorporate appropriate best practices into its planning operations.³⁷

The Acquisition Center also creates a permanent staff in headquarters to perform the source selection function for all major acquisitions. Site office personnel will continue to comprise a significant proportion of the voting membership of the Source Evaluation Boards (SEBs) and provide throughout the source selection process appropriate advisory support concerning site conditions and risks. However, headquarters staff will perform the work associated with establishing the SEBs, i.e., chair the SEBs; develop documentation for DOE and EM headquarters reviews; produce the technical evaluation reports and supporting documentation; and manage the overall SEB process. Having staff dedicated to these activities will build a cadre with expertise to perform this work and will free site staff from these time-consuming activities.

The Panel recognizes the potential benefits from the proposed centralization of these planning and source selection functions, but also is mindful that such efforts often at can be at the expense of meaningful input from the field. It is critical that a substantial role for EM site management and staff be clearly defined and maintained during all stages of the acquisition process.

³⁶ A description of DOE acquisition planning requirements is included in Appendix B, Section II, "DOE Acquisition Planning Requirements."

³⁷ Information on the Academy staff's benchmarking session with NAVFAC is found in Appendix B, Section III, "Results of Benchmarking with the Naval Facilities Engineering Command."

Initially, the Acquisition Center also would have created a contract placement function in EM headquarters to award EM's major contracts. After award, the contracts would be transferred to site contracting staff for administration. In its September 2006 Observations Paper, the Panel questioned EM's intent to locate the contract placement function in headquarters. **Instead, the Panel proposed that EM locate the contract placement function at the EMCBC to build upon the acquisition infrastructure that already existed there.** EM leadership agreed. **In its January 2007 Observations Paper, the Panel also proposed that EM further utilize the EMCBC's acquisition infrastructure to provide cost and price analysis support to all EM sites and to help the sites develop local acquisition guidance and templates.** The EMCBC has cost and price analysts that provide the EMCBC contracting officers with independent advice and insights concerning site contractors' pricing policies and practices and assist them in developing more effective negotiation objectives. Although Savannah River and Carlsbad are responsible for administering major site contracts, neither has had access to cost and price analyst support. In addition, the EMCBC's Office of Contracting has a Policies and Administrative Support Team that developed local instructions and guidance to support EMCBC staff and customers. However, neither Savannah River nor Carlsbad has developed any local operating procedures or guidance to support their acquisition and financial assistance operations. Although Savannah River and Carlsbad do not have the volume of transactions or the variety of customers as EMCBC, some basic guidance and templates would help promote consistency of operations and assist their customers in requisitioning and other aspects of the acquisition process. EM also agreed with this Panel proposal and transferred six full-time equivalents to the EMCBC so it could hire three procuring contracting officers and three cost and price analysts to support the EM Acquisition Center and site contracting operations. All of these positions have been filled.

The Panel is pleased to note that EM has made significant progress to implement the EM Acquisition Center. The DAS for Acquisition and Project Management has drafted and EM field procurement directors have reviewed a detailed draft Concept of Operations (CONOPS) that contains:

- a description of operations during the acquisition initiation, acquisition planning, source selection, and contract management phases
- oversight mechanisms
- roles and responsibilities of all key personnel involved in the acquisition process

The document outlines strong leadership from EM headquarters for major acquisitions with significant participation from the sites throughout the acquisition lifecycle. The lack of a clear understanding of how the EM Acquisition Center would function and, in particular, the field's role, was a common concern at all sites the Academy staff visited. The CONOPS should help ease those concerns. The process to develop the CONOPS reinforces the importance of headquarters leadership and the need for substantial involvement of site personnel throughout the acquisition process.

In its January 2007 Observations Paper, the Panel expressed concerns about the staff capacity in EM headquarters to execute the Acquisition Center concept because the DAS for Acquisition

and Project Management had no GS 1102s (contract specialists) to carry out the acquisition planning and source selection functions. The Panel believed that successful implementation of the concept required EM to have this level of expertise. **Thus, the Panel proposed that the Assistant Secretary develop for submission to DOE headquarters a staffing request for the necessary GS 1102 procurement analysts.** OPAM did not support EM's request. Because EM headquarters does not have authority to award contracts, OPAM did not believe that EM should have GS 1102s. However, the Deputy Secretary ultimately determined that EM should be allowed to hire GS 1102 procurement analysts to support the EM Acquisition Center. Ten of the positions (six at the EMCBC and four at EM headquarters) have been filled, and another advertisement for one additional headquarters position closed on October 30, 2007.

The EM Acquisition Center is ready to undertake its first major acquisition. EM has selected the Portsmouth Gaseous Diffusion Plant to be the first procurement to use the new concept. EM has assigned an acquisition planning manager, and the acquisition planning integrated project team (IPT) has been formed and is functioning.

HEAD OF CONTRACTING ACTIVITY AUTHORITY IN EM

The Federal Acquisition Regulations (FAR) defines the Head of Contracting Activity (HCA) as "the official who has overall responsibility for managing the contracting activity."³⁸ In DOE, the Procurement Executive delegates authority to each designated HCA to award and administer contracts, sales contracts, and financial assistance instruments; exercise overall responsibility for managing the contracting activity; and appoint contracting officers.³⁹

Until recently, the DOE Procurement Executive delegated HCA authority to the EM site managers at Savannah River, ORP, and the Richland Operations Office, and to the director of the EMCBC. Those individuals issued contracting warrants to the site contracting staff. The EMCBC director also issued warrants to contracting staff assigned to the Carlsbad Field Office and the Portsmouth/Paducah Project Office.

To strengthen the management of EM's acquisition operations and promote their consistency and accountability, Assistant Secretary Rispoli proposed in August 2006 that the DAS for Acquisition and Project Management become the HCA for all of EM.⁴⁰ The DAS would then issue warrants to the contracting staff at the sites.⁴¹ The DOE Procurement Executive agreed to this conceptually. The Panel also agreed with EM's desire for a single HCA, however, **in its January 2007 Observations Paper, the Panel proposed that the DAS for Acquisition and**

³⁸ FAR 2.101

³⁹ DOE Order 541.1A, Appointment of Contracting Officers and Contracting Officer Representatives, requires that the HCA ensure that only trained and qualified procurement and financial assistance professionals are delegated contracting/financial assistance authority. The HCA is responsible for appointing contracting officers and signing all SF 1402 certificates (contracting officer warrants). Neither of these responsibilities may be re-delegated.

⁴⁰ Memorandum from James Rispoli, Assistant Secretary for Environmental Management, to the Director, Office of Procurement and Assistance Management, dated August 8, 2006.

⁴¹ This approach is consistent with HCA implementation at other civilian agencies. Examples are included in Appendix B, Section IV, "Head of Contracting Activity Delegation."

Project Management develop and execute an implementation plan for assuming EM HCA responsibilities that balanced EM's oversight concerns with day-to-day site operational responsibilities.

EM and DOE headquarters agreed with the Panel's proposal and EM developed an implementation plan, which it submitted to the DOE Procurement Executive on August 31, 2007.⁴² Academy staff reviewed it and concluded that it presents a sound blueprint for implementing the new EM HCA authorities. These authorities include additional responsibilities for personal property management and contractor human resources. Although the implementation plan calls for maximizing utilization of site resources to perform these responsibilities in the near term, EM anticipates strengthening the HCA's emphasis on them in the future. On November 15, 2007, the OPAM director designated the DAS for Acquisition and Project Management as the HCA for EM.⁴³ The delegation contains specific authorities (some of which may be re-delegated) related to acquisition, assistance, sales, property, and appointment of contracting officers. OPAM's approval or waiver is required for:

- competitive solicitations of \$15 million or more
- subcontracts of \$25 million or more
- all other contract actions of \$10 million or more
- grant and cooperative agreement actions of \$10 million or more

EM will begin to implement the new HCA authorities immediately. However, as discussed below, the Panel is very concerned about the delegation thresholds, which it believes, given the average size of EM's contracting actions, are inordinately low.

DOE HEADQUARTERS OVERSIGHT⁴⁴

DOE Headquarters Business Clearance Review Process

As noted above, DOE headquarters performs a business clearance review function for many of EM's major acquisitions, and the amount of time to complete these reviews has been the source

⁴² Memorandum from James A. Rispoli, Assistant Secretary for Environmental Management, to Edward R. Simpson, Director, Office of Procurement and Assistance Management, subject: Submission of Implementation Plan to Designate the Deputy Assistant Secretary for Acquisition and Project Management as Head of Contracting Activity for the Office of Environmental Management, August 31, 2007.

⁴³ Memorandum from Edward R. Simpson, Director, Office of Procurement and Assistance Management, to John E. Surash, Deputy Assistant Secretary for Acquisition and Project Management, subject: Delegation of Authority/Designation of Head of Contracting Activity (HCA) for the Office of Environmental Management. Memoranda rescinding HCA authority for the EMCBC, the Richland Operations Office, ORP, and Savannah River Office also were issued.

⁴⁴ A detailed description of this process can be found in Appendix B, Section V, "DOE Headquarters Business Clearance Process."

of frustration and concern.⁴⁵ In its September 2006 Observations Paper, the Academy Panel proposed that EM work collaboratively with OPAM and the Office of General Counsel to do an engineering analysis of the DOE business clearance review process, including flowcharts, to identify the causes for the current delays, and to reengineer the process to incorporate servicing metrics and the shared commitment among the offices to produce a more efficient, effective, and timely review of documents that are generated during the course of an EM acquisition. Subsequently, DOE's Office of Management began a comprehensive effort to reengineer the business clearance review process, and EM advised that the Panel's proposal would be addressed as part of that effort. The effort entailed process mapping, interviews with senior representatives of all the major DOE headquarters program offices, and benchmarking of comparable processes at the National Aeronautics and Space Administration and NAVFAC. The reengineering team issued its report⁴⁶ on November 14, 2007, and an implementation plan is under development. The report contains 22 recommendations that are organized in four categories: improving the effectiveness and efficiency of the business clearance process; improving DOE contracting activity accountability and performance; improving the procurement system; and improving knowledge management. Major recommendations include:

- raising the delegations of procurement authority for competitive negotiated acquisitions to \$50 million for those DOE contracting activities that award and administer major site and facility management contracts
- requiring each contracting activity to annually report for potential business clearance review its five largest competitive acquisitions, regardless of dollar value, and all competitive acquisitions that are valued in excess of \$50 million
- conducting a follow-on assessment to determine adjustments to current delegation thresholds for other than competitive negotiated transactions (e.g., sole-source, financial assistance, interagency agreements, subcontracts)
- requiring that the contracting activity establish, prior to development of an acquisition plan, a formal IPT for all acquisitions that are valued greater than \$50 million
- establishing a formal procurement management review function to supplement the current Balanced Scorecard Self-Assessment Program (discussed below)
- initiating a Department-wide study of the DOE acquisition workforce that assesses the adequacy of the current staffing levels and associated resources for each of DOE's contracting activities

⁴⁵ In its June 2006 report, *DOE CONTRACTING, Better Performance Measures and Management Needed to Address Delays in Awarding Contracts* GAO-06-722, GAO found in its review of five DOE contracts that “delays in obtaining the required review and approval from DOE headquarters officials caused an average 5-month delay in contract award.”

⁴⁶ *Report on Reengineering the Business Clearance Process*, prepared by the Acquisition Process Reengineering Team, U.S. Department of Energy, Office of Procurement and Assistance Management.

In addition, the report contains numerous recommendations that are designed to address delays and inefficiencies in the business clearance process.⁴⁷

One of the Panel's major concerns with DOE's business clearance process has been the delegated authority provided to EM's HCAs. At the outset of the study, they had delegated authority up to \$5 million. Acquisitions above that level were subject to DOE business clearance reviews and approvals. In May 2007, OPAM increased the threshold for several DOE sites. For example, the Richland Operations Office and Savannah River received new delegated acquisition authorities equal to the thresholds now being delegated to the DAS for Acquisition and Project Management under the new HCA authority described above. In general, the Academy Panel is encouraged by DOE's reengineering effort and its potential for improving the efficiency and effectiveness of the current business clearance process. But it notes that the proposed \$50 million threshold for competitive procurements that is contained in the reengineering report will only exempt some of EM's smaller competitions from the business clearance process, and the report leaves the thresholds for other actions intact. Given the dollar magnitude of EM's contract actions, the new thresholds provide EM little relief from the business clearance review process.

The issue is not whether there is a need for an increase in authority but the extent of such an increase. **In its January 2007 Observations Paper, the Panel proposed that the delegation level be raised to \$100 million, with requirements between \$20 million and \$100 million subject to review by the EM HCA⁴⁸ and the DOE General Counsel.** EM met with OPAM and received a negative response to the Panel's proposal. During a discussion of the business clearance process between DOE General Counsel staff and Academy staff, however, the General Counsel's staff supported the idea of piloting the higher thresholds at a single EM site. EM has advised Academy staff that it plans to submit an implementation plan to OPAM that provides for such a pilot after six months of operating under the new HCA delegation.

It is OPAM's view that meaningful reform of EM's acquisition operations does not hinge upon elevated review thresholds and that, for now, EM's thresholds will remain consistent with other headquarters DOE HCA authorities. OPAM acknowledges the progress EM has made to improve its acquisition performance, but maintains that some of the vulnerabilities that existed in the past still remain. Once EM has demonstrated that it has implemented required systems improvements, OPAM has indicated that it is prepared to increase the current threshold levels. The Panel still believes that the \$100 million delegation level is an essential component of an

⁴⁷ For example: requiring OPAM staff to collect, reconcile, and consolidate all DOE headquarters review comments, e.g., General Counsel, Acquisition Planning and Liaison Division management, headquarters stakeholder organizations (Safety, Security, Engineering and Construction Management, Contractor Human Resources Management Team) prior to referral to the contracting officer for resolution; classifying all comments/recommendations as either mandatory or optional, and identifying the rationale/basis for the comment (e.g., law, regulation, management direction, lesson learned from a prior transaction); expanding the current practice of providing approval of packages on a conditional basis to the maximum extent practicable, subject to the contracting activity's written agreement to fully implement mandatory review comments (this would not require the contracting activity to resubmit the package for further business clearance review); and developing an electronic business clearance data collection, reporting, and tracking system.

⁴⁸ This will be the Deputy Assistant Secretary for Acquisition and Project Management once DOE issues its final approval.

acquisition program that balances EM's operational needs with meaningful oversight, and urges EM to continue to pursue its timely adoption.

Finally, the Panel also noted that EM needed to ensure that its own review processes for feeding DOE's business clearance process and approving contracts for which it has delegated authority were streamlined and did not cause delays in the acquisition process. **Accordingly, in the August 2007 Observations Paper, the Panel proposed that the DAS for Acquisition and Project Management review all processes for reviewing and approving acquisition transactions at EM headquarters.** EM has agreed with the proposal and plans to begin the review when the new DOE business clearance process goes into effect.

DOE's Balanced Scorecard Program

DOE does not rely solely on the business clearance process to ensure the quality of the Department's contracting activities. Prior to 1995, it conducted procurement reviews of DOE's contracting offices where it looked at a sample of transactions executed. In 1995, DOE replaced its headquarters-based, process-oriented review program with a Federal Balanced Scorecard Performance Management Program, where DOE operations/field offices perform periodic self-assessments that:

- determine the degree of customer satisfaction with performance
- employ measures and trends to determine cost and efficiency of business systems and processes
- assess the organization's strategic information and skills in order to ensure that they are aligned to support critical business systems and processes
- ensure compliance with applicable laws, regulations, and contract terms and conditions⁴⁹

Numerous federal agencies have adopted balanced scorecard programs for their acquisition organizations, and the Panel recognizes their utility in providing meaningful measurement of an office's effectiveness and efficiency. However, in the Panel's view the self-assessments required by DOE's program are likely to be staff-intensive and it is doubtful that any of EM's sites (with the possible exception of the EMCBC) can conduct them without there being a significant impact on a site's acquisition operations. Also, the lack of independence of the reviewers is an issue. In the Panel's view, it would be more effective to have an independent party perform that portion of the review instead of the site. **In its January 2007 Observations Paper, the Panel proposed that EM and DOE establish an acquisition management review program.** As noted above, the OPAM business process reengineering team also has recommended reinstitution of procurement management reviews.

⁴⁹ Department of Energy Office of Procurement and Assistance Management Balanced ScoreCards for the Business Systems, Office of Procurement and Assistance Management website, <http://professionals.pr.doe.gov/ma5/MA-5Web.nsf/Business/BSC+for+Management>

EM has agreed with the proposal and plans to implement it during FY 2008. The Panel envisions an approach that would supplement DOE's existing balanced scorecard program, which it continues to endorse. Efforts should be made to eliminate any duplication of effort between the two programs, and to develop essential tools that OPAM can use to encourage performance improvement in EM and other DOE organizations.

OPPORTUNITIES TO EXPAND THE EMCBC'S FINANCIAL ASSISTANCE RESPONSIBILITIES

All EM acquisition sites are responsible for awarding and administering contract (acquisition) and grant and cooperative agreement (financial assistance) actions. Acquisition and financial assistance actions require knowledge of legal instruments that differ in terms of their principal purposes; regulatory environments and processes; and types of awardees. Even though EM's mission is overwhelmingly acquisition-based, all of its acquisition sites currently award and administer financial assistance actions. EM also uses other DOE offices to process its financial assistance activity.

The EMCBC has a small staff in its Office of Contracting that focuses on financial assistance. The Academy Panel thinks that this capability could gradually be expanded to absorb new and/or existing financial assistance workloads from other EM sites. Other staff in the Office of Contracting and other offices in the EMCBC, such as the Chief Counsel, could provide the support infrastructure needed to process the financial assistance actions. The Panel concluded that consolidating EM's financial assistance activities would:

- free up staff at major EM sites to concentrate on the significant acquisition-related issues at the sites
- improve the consistency and quality of the award and administration of EM financial assistance by assigning it to a dedicated staff of professionals who would focus exclusively on financial assistance
- minimize reliance on other DOE offices to provide the requisite support

Accordingly, in the January 2007 Observations Paper, the Academy Panel proposed that the DAS for Acquisition and Project Management develop a plan for centralizing the award and administration of all EM financial assistance instruments at the EMCBC. EM agreed with the proposal and was proceeding to develop an implementation plan. However, field staff raised concerns that the close working relationships with local financial assistance recipients will be disturbed by this centralization effort. They believe that the scope of work covered by these instruments have local interest and significant political implications that require hands-on administration at the local level. They are concerned that relocating the financial assistance agreements and contracting officer functions to the EMCBC may have a detrimental effect on the quality of communications between the site offices and the financial assistance

awardees.⁵⁰ In its August 2007 Observations Paper, the Panel emphasized that the onsite contracting officer representative will need to continue to maintain a close working relationship with the local assistance recipients and ensure that communications remain active and productive. EM plans to further review the staff's feedback, make any necessary changes to the implementation strategy, and complete implementation by the end of FY 2008.

ACQUISITION SUPPORT AT DOE SITES

During the course of this study, Academy staff visited 10 DOE sites, shown in Table 1, that provide acquisition support to the EM Program.

Table 1: Acquisition Offices Servicing EM Visited by Academy Staff⁵¹

Acquisition Office at:	Location	Size of Field Office	DOE Program Landlord
EMCBC	Cincinnati, Ohio	NA	EM
Savannah River Operations Office	Aiken, SC	Large	EM
Carlsbad Field Office	Carlsbad, NM	Small	EM
Richland Operations Office	Richland, WA	Large	EM
Office of River Protection	Richland, WA	Large	EM
Portsmouth/Paducah Project Office	Lexington, KY	Small	EM
Idaho Operations Office	Idaho Falls, ID	Large	Nuclear Energy
Oak Ridge Office	Oak Ridge, TN	Large	Science
Los Alamos National Lab	Los Alamos, NM	Small	NNSA
Brookhaven National Lab	Islip, NY	Small	Science

Quality of Support

The acquisition staff at all EM-owned sites appeared to be well-trained, with site management ensuring that the necessary training to meet required certification levels is provided. During site visits, Academy staff interviewed numerous program personnel and customers of the sites' acquisition offices. In general, the contracting staff received high marks in terms of their general competence and the support provided. However, in some cases, interviewees' assessments included observations about the contracting office being understaffed, leaving the impression that their service expectations had been reduced accordingly.

EM staff and management at Idaho, Oak Ridge, and Brookhaven were similarly pleased at the level of acquisition support they receive from their landlord organizations. In general, they believe that the EM work is receiving the same degree of attention as the landlord's. This also

⁵⁰ Report on Proposed EM Financial Assistance Centralization Effort at the EMCBC, Office of Project and Contract Execution, September 2007.

⁵¹ Academy staff also visited the NNSA Nevada Site Office, however, there is no onsite acquisition office. Acquisition requirements are handled by NNSA's Service Center in Albuquerque.

was true at Los Alamos, despite some issues related to the NNSA-EM working relationship.⁵² The Panel concluded that, with the exception of the effort to centralize the award and administration of financial assistance, there was no compelling reason to disturb the existing contracting support arrangements with the non-EM offices.

Workload and Staffing

Academy staff compared the number and dollar value of instruments under administration and the number of staff assigned for the visited sites.⁵³ However, the EM workload/staffing ratios provide limited insights into the adequacy of contracting staff. Because much of the work involves administering major contracts with significant complexities and challenges, these ratios alone cannot be used to assess the adequacy of staffing at any specific site. Site visits also confirmed a general lack of bench strength at most of the EM acquisition offices, which is further compounded by looming retirements and the loss of key senior staff. In addition, the Academy staff's recent analysis of field contract administration (see the section later in this chapter) raises questions about the adequacy of staffing levels for those activities. All of this argues in favor of EM's initiatives to develop more streamlined and centralized approaches to handle major procurements. It also demonstrates the need to backfill projected vacancies to ensure smooth workload transitions and prevent serious degradation in service. Finally, it supports a proposal the Panel made in its August 2007 Observations Paper to develop a workload/workforce planning methodology.⁵⁴

CONTRACT TYPES AND THE USE OF PERFORMANCE-BASED INCENTIVES

Throughout the study, Academy staff examined many of EM's major contracts. Although contract type is not necessarily a determining factor with respect to the success or failure of a project, if an inappropriate contract type is used, the consequences to the government and the contractor can be significant.

Contract Types

EM has used several different contract types to perform its work. Initially, management and operating (M&O)⁵⁵ and management and integrating (M&I)⁵⁶ contracts were the most common

⁵² The Human Capital Management and Organization and Management chapters of this report discuss this subject in greater depth.

⁵³ Except for Brookhaven, descriptions of the acquisition offices' workload and staffing are contained in Appendix B, Section VI, "Acquisition Support at DOE Sites."

⁵⁴ Workload/workforce planning is discussed in Chapter 5, Human Capital Management.

⁵⁵ As defined by FAR 17.601, management and operating contract means an agreement under which the government contracts for the operation, maintenance, or support, on its behalf, of a government-owned or -controlled research, development, special production, or testing establishment wholly or principally devoted to one or more major programs of the contracting federal agency.

⁵⁶ M&I contracts were created by DOE as a contract reform measure to better reflect the changing missions of the sites and tailor the scope to program requirements. Under this type of contract, one contractor is responsible for integrating the work of a variety of subcontractors that carry out most of the work at the sites. This approach has been applied at sites such as Oak Ridge for environmental restoration work.

contract vehicles used. Although these contracts were cost plus award fee (CPAF)⁵⁷ in nature, they generally did not include specific performance-based standards for the contractor's performance. As the government intensified its focus on contractor performance, the use of CPAF and cost plus incentive fee (CPIF)⁵⁸ contracts with objective performance standards became more prevalent.

There has been considerable disagreement among EM headquarters, site staff, and OPAM on the appropriate contract type for EM's activities, which have resulted in confusion and significant delays in the acquisition process. Many people interviewed extolled the benefits of the CPIF contract and its ability to focus all parties on completion and closure. Supporters pointed to examples, such as Rocky Flats⁵⁹ and the Fernald Closure Project, where total cost and schedule reductions occurred under CPIF contracts despite the initial uncertainties those projects faced with respect to potential risk and project end state, i.e., the level of cleanup required and the final use of the land. Other examples around the complex where CPIF contracts are working well include the River Corridor Closure Project Contract at the Hanford Site in Richland, WA, which contains special contract provisions to address some of the concerns related to typical EM contract uncertainties. For example, to reduce the impact of differing site conditions, the contract establishes a 15 percent threshold requirement in quantities/cost variation for equitable adjustments related to differing site conditions. Issues of funding availability are dealt with by a provision that requires equitable adjustment if DOE does not conform to the contract's funding profile.

Despite these and other successes with CPIF contracts, many staff cautioned that if the end state for a site is not well defined up front or if the level of uncertainty and risk is too great to overcome, this contracting approach is not advisable. Perhaps the most visible example of where a CPIF contract has not been well-suited to the project's complexities and uncertainties is the Waste Treatment and Immobilization Plant (WTP) project also at the Hanford Site. The WTP contract with Bechtel National Inc., (BNI) includes the design, construction, and start up of the WTP. The WTP will be an industrial complex of facilities for separating and vitrifying (immobilizing in glass) millions of gallons of radioactive and chemical wastes stored at the Hanford Site. The five major components of the WTP include a pretreatment facility for separating the waste; high-level waste and low-activity waste facilities where the waste will be immobilized in glass; an analytical laboratory for testing the quality of the glass; and the balance of facilities, which will comprise over 20 various support facilities.

⁵⁷ The CPAF contract provides for reimbursement of allowable costs incurred, payment of a base fee (normally 1-3%), and payment of award fee based on the government's post-performance evaluation of the contractor's success in meeting criteria (often subjective) contained in the award fee plan.

⁵⁸ Under a CPIF contract, the contractor earns the target fee if final costs are at the target level. A share formula is negotiated where the contractor earns additional fee if final costs are below the target cost and receives a reduced fee to the extent that costs exceed the target or if other contract terms are not met. Additional incentives or disincentives may be included to provide for increases/reductions of fee based on the contractor's meeting/not meeting certain predetermined performance levels, e.g., early/late completion or safety metrics. The CPIF contract contains provisions that establish the minimum and maximum fees that may be earned.

⁵⁹ See Appendix B, Section VII, "Lessons Learned From Rocky Flats" for a more complete discussion of the Rocky Flats project.

In December 2000, BNI was awarded a CPIF contract with a total project cost of \$4.35 billion to design, construct, and commission the WTP by mid-2011. In April 2003, with the design about 30 percent complete, BNI revised the project cost estimate to \$5.78 billion with no change in the completion date. Two years later, BNI revised the estimate to \$8.35 billion with a 4-year schedule slippage to mid-2015. As a result of these cost increases and schedule delays, DOE's Office of Engineering and Construction Management engaged the Logistics Management Institute to review the project.⁶⁰ In June 2006, BNI proposed a total project cost (without fee or potential incentives) of \$11.553 billion and a completion date of August 2019. That estimate was the subject of an independent validation review conducted by the U.S. Army Corps of Engineers,⁶¹ which computed an estimate at completion cost of \$12.203 billion and a schedule completion date of November 2019. On December 22, 2006, the DOE Deputy Secretary approved a baseline change for the WTP to establish a total project cost of \$12.263 billion and a completion date of November 2019.

There were numerous factors that contributed to the problems at WTP.⁶² In hindsight, however, all parties agreed that a CPIF contract was clearly not an appropriate contracting vehicle for the WTP. The extent of technical uncertainties was too great to establish the types of cost and schedule targets incorporated in the contract. Although this choice of contract did not lead to the cost growth and schedule slippage, the contract's incentive fee structure is now a casualty of those problems.⁶³ ORP will be renegotiating the contract to incorporate the new approved cost and schedule baselines, resolve any outstanding requests for equitable adjustment (REA), and establish a new incentive approach for the subsequent performance period. Timely resolutions of these issues are critical if additional changes to the baseline are to be avoided. BNI suppliers have already indicated that the delays in construction will necessitate a renegotiation of their prior agreements.

Given the very different circumstances found at EM sites, the Panel concluded that there is no one cookie-cutter approach for selecting the appropriate contract vehicle, and in its September 2006 Observations Paper, the Panel proposed that EM, in consultation with OPAM and the Office of General Counsel, develop detailed guidance for determining the appropriate contract types for EM acquisitions. EM issued guidance that addressed this proposal in May 2007.

In that paper, the Panel also discussed the role of federal staff and their interactions with contractors. One of the criticisms of the M&O contract approach was that federal staff were

⁶⁰ *Hanford Waste Treatment and Immobilization Plant Project, After Action Fact-Finding Review*, Report DE535T1, January 2006.

⁶¹ *Independent Validation Review of the May 2006 Estimate at Completion for the Hanford Waste Treatment and Immobilization Plant Project*, U.S. Army Corps of Engineers, Walla Walla District, August 28, 2006.

⁶² Appendix B, Section VIII, "Cost Growth and Schedule Slippage at the Waste Treatment and Immobilization Plant" summarizes the views of GAO, Logistics Management Institute, and Assistant Secretary Rispoli about the causes for the problems with the WTP project, which included faulty initial estimates, a flawed acquisition strategy, contractor performance problems, DOE management problems, and significant technological challenges; and discusses current acquisition issues.

⁶³ Cost and schedule incentives of over \$300 million are no longer meaningful. Some of the performance incentives when operations begin may still be viable.

continually directing contractor activity to the detriment of final closure and completion. The shift to a more results-focused effort by EM's prior leadership led to the admonition to "manage the contract, not the contractor." Today, EM leadership strongly stresses the importance of managing the project, with the contract as the vehicle for doing so. The Panel endorses this approach provided that it does not involve extensive technical direction to the contractor about how the work should be performed, but rather focuses on monitoring the contractor's progress in meeting specific performance objectives and standards that are contained in the contract. **To promote additional clarity regarding these roles and responsibilities, the Panel proposed that EM leadership develop guidance for EM staff that clarifies the staff's role in dealing with the contractor.** EM issued appropriate guidance in May 2007.

The Academy Panel believes that the actions EM is taking to improve its acquisition operations and the project management discipline that is being instilled within EM (discussed in Chapter 4, Project Management) will help prevent or mitigate the types of cost growth and schedule slippage experienced at the WTP. However, the Panel believes that it is important that other sites are aware of the types of acquisition-related problems that occurred at WTP and how to prevent them. **In the August 2007 Observations Paper, the Panel proposed that the Assistant Secretary prepare and issue a document that summarizes the basic factual circumstances related to the cost growth and schedule slippage on the WTP project and identifies the lessons that could be applied to other EM acquisition situations.** EM has agreed to prepare a short document to address the Panel's proposal.

Performance-Based Acquisition Concepts and Incentives

Performance-based acquisition is a collection of strategies, methods, and techniques for acquiring services that focuses on describing end results rather than prescribing the manner in which the services are to be provided, and measuring whether or not those results are obtained. All EM sites use performance-based acquisition concepts and incentives. However, the Panel found that the extent to which contracts had measurable performance standards and methods to assess contractor performance varied. For example, the performance-based incentive structures of the Tank Farm and Project Hanford Management Contracts appear to be very appropriate for their complexity and nature. Although the performance-based incentives have slight variations in their structures, they are clear, measurable, have defined acceptance criteria, and provide clear indications of the government-furnished items or services that are necessary for success. In addition, each has a detailed contract management plan that summarizes contract requirements; identifies essential roles and responsibilities; and serves as a comprehensive blueprint for performing the necessary contract monitoring and administration responsibilities. The Savannah River IT contract also contains a sound, comprehensive set of measurable performance standards for IT support. However, in other cases, performance standards were not established for all of the services. In addition, none of the documents submitted to Academy staff described the method for assessing the contractor's performance against the standards contained in the contract. Similar deficiencies were found in other EM contracts. **In the January 2007 Observations Paper, the Academy Panel proposed that EM develop additional training and management emphasis with regard to performance-based acquisition concepts.** EM has agreed to implement this proposal.

ADDITIONAL PANEL OBSERVATIONS

EM's Small Business Contracting Program

The U.S. Small Business Administration (SBA) negotiates the annual socioeconomic procurement preference program, or contracting goals, with federal agencies. The goals are based on statute and require that, in the aggregate, agencies award prime contracts as follows:

- 23 percent to small businesses
- 5 percent to small disadvantaged businesses
- 5 percent to women-owned small businesses
- 3 percent to HUBZone⁶⁴ small businesses
- 3 percent to service-disabled veteran-owned small businesses⁶⁵

DOE is the largest civilian contracting agency. Historically, its facilities management contractors (FMCs), which are principally large businesses, educational institutions, and non-profit organizations, have received an overwhelming proportion of DOE's contract obligations. For example, in FY 2006, over 84.4 percent of DOE contract dollars were awarded to FMCs.⁶⁶ The remaining 15.6 percent were used to fund non-FMC work, and were DOE's only available pool for meeting its prime contracting small business goals.⁶⁷

Prior to 1999, DOE was allowed to count FMC subcontracts as if they were prime awards for the purposes of goaling and reporting results. In 1999, the Office of Federal Procurement Policy decided that DOE could no longer count FMC subcontracts as prime awards. Even with a corresponding reduction in its small business prime contracts goal, DOE has had difficulty meeting its goals in subsequent years.⁶⁸

⁶⁴ The Historically Underutilized Business Zone (HUBZone) Act of 1997 created the HUBZone Program to provide federal contracting assistance for qualified small business concerns located in historically underutilized business zones, in an effort to increase employment opportunities, investment, and economic development in those areas. If SBA determines that a concern is a qualified HUBZone small business concern, it will issue a certification to that effect and will add the concern to the List of Qualified HUBZone Small Business Concerns on its Internet website. A firm on the list is eligible for HUBZone program preferences without regard to the place of performance.

⁶⁵ SBA Goaling Program, http://www.sba.gov/aboutsba/sbaprograms/goals/SBGR_2006_SBGR_PSO.html. SBA negotiates separate goals with each federal agency, which may be above or below the aggregated percentages.

⁶⁶ EM, the Office of Science, and NNSA account for over 90 percent of DOE obligations and the great preponderance of FMC contracts.

⁶⁷ *Report to the Secretary of Energy on the U.S. Department of Energy's Small Business Programs, Fiscal Year 2006*, prepared by the Office of Economic Impact and Diversity of the Office of Small and Disadvantaged Business Utilization.

⁶⁸ DOE's small business prime contracting goal was adjusted downward from 18 percent in FY 1999 to 5 percent in FY 2000.

EM Efforts to Increase Small Business Prime Contracting

In 2006, GAO reported that:

DOE's efforts to increase the opportunities for small businesses to win contracts with the department included restructuring or "breaking out" portions of projects historically conducted by the department's facility management contractors and redirecting that work to small businesses, modifying procurement strategies to expand opportunities for small businesses, and continuing to emphasize the award of nonfacility management contracts to small businesses.⁶⁹

EM has successfully pursued these strategies to increase its prime small business participation. First, as reported by GAO,⁷⁰ EM redirected work from major projects to small businesses as shown in Table 2.

Table 2: Redirected EM Procurements

Project and Location	Brief Description of Work	Contract Value (in millions)
222-S Lab, Hanford, WA	Analytic work on waste samples	\$58.8
Columbus Closure Project, OH	Environmental cleanup	\$42.1
Glass Water Storage Building #2, Savannah River, SC	Construction of waste storage facility	\$63.2
Grand Junction Office Mission Support, CO	Technical, project management, and administrative services	\$159.5
Portsmouth Infrastructure, OH	Facility management contract for facility operations	\$48.8
Portsmouth Remediation, OH	Facility management contract for environmental cleanup	\$141.3
Paducah Infrastructure, KY	Facility management contract for facility operations	\$39.9
Paducah Remediation, KY	Facility management contract for environmental cleanup	\$191.6

Secondly, in FY 2004, EM established indefinite delivery/indefinite quantity contracts that were awarded to 8 large and 14 small businesses to provide as-needed services for cleanup, deactivation, and removal of facilities services. To date, EM has awarded 10 task orders under indefinite deliver/indefinite quantity contracts with an aggregate award amount of \$156.2 million. Eight of the awards, with an aggregate amount of \$57.8 million, were to small businesses.

⁶⁹ DOE CONTRACTING, Improved Program Management Could Help Achieve Small Business Goal, GAO-06-501, April 2006.

⁷⁰ Ibid. page 10.

These actions have produced positive results. FY 2006 and FY 2007 prime small business contracting goals and achievement for DOE and EM are shown in Table 3.⁷¹

Table 3: FY 2006 and FY 2007 Prime Small Business Performance

	2006 Goal	2006 Achievement	2007 Goal	2007 Achievement
DOE	4.34%	5.37%	4.42%	6.19%
EM	3.35%	5.47%	3.35%	7.15%

In addition, in FY 2006, EM awarded another 15.1 percent of its total contracts dollars to small businesses through subcontracting.⁷² On June 26, 2007 at DOE's Annual Small Business Conference, EM received the Federal Small Business Achievement Award for its success in migrating work from large to small businesses and the Federal Small Business Advancement Award for increases in small business participation. An employee of EM's Savannah River site office received the DOE Small Business Program Manager of the Year for efforts to increase prime small business contracting at the site.

Potential Issues with EM's Small Business Program

The breakout strategies EM has employed, although successful, also have raised some concerns among EM staff, which are summarized below.

- The increased number of contracts/task orders to administer impacts the workload of contracting, program, and technical staff.
- Site staff must define and manage an increased number of contractor interfaces.
- Some small businesses lack experience or familiarity with:
 - earned value management
 - DOE/EM safety requirements
 - DOE/EM prime reporting and accounting requirements
 - other performance expectations that have been developed over the years and are fully understood by prime FMCs that previously performed the work

Currently, EM does not have procedures in place to vet such concerns prior to making a small business award. Recently, another issue has emerged regarding the different pension benefit plans of M&O and non-M&O contracts and the possible problems this may cause for future breakout strategies. EM is currently studying the matter and developing options to address it.

⁷¹ U.S. Department of Energy, *Small Business Obligations Analysis, Goals vs. Actual Report*, furnished by EM staff on 8/29/07.

⁷² From a presentation by Assistant Secretary James A. Rispoli at the 8th Annual DOE Small Business Conference, Washington, D.C., June 27, 2007.

Conclusions and Recommendations

The Panel applauds EM's aggressive efforts to increase prime contracting for small businesses. EM's contracting program can benefit from developing additional small business sources and the increased competition that will result. However, EM needs to establish processes and procedures to ensure that concerns and issues regarding redirected work efforts are fully vetted before any set-aside decision is made, and that resources are made available and actions are taken to eliminate or mitigate any problems once a set-aside is made. In particular, EM should focus on the number and competencies of contracting staff needed to administer any significant increases in small business contracts.

The Panel recommends that the DAS for Acquisition and Project Management establish acquisition planning requirements and develop appropriate planning templates that provide for full consideration of the issues and concerns related to small business set-asides. The requirements should require a full description of any additional resources and strategies needed to make the set-aside successful, such as:

- **additional staffing**
- **solicitation provisions that provide prospective small business offerors with increased opportunities to obtain the necessary information to fully understand contract requirements and quickly initiate performance**
- **structured post-award conferences and training to ensure full understanding of EM expectations**
- **incentives and disincentives for facilities management contractors to ensure their full cooperation in transitioning work and establishing/maintaining necessary site interfaces**

Contract Administration

With the exception of the EMCBC, EM's contracting offices are predominantly engaged in contract administration. Contract administration has been defined as follows:

Contract Administration involves those activities performed by government officials after a contract has been awarded to determine how well the government and the contractor performed to meet the requirements of the contract. It encompasses all dealings between the government and the contractor from the time the contract is awarded until the work has been completed and accepted or the contract terminated, payment has been made, and disputes have been resolved. As such, contract administration constitutes the primary part of the procurement process that assures the government gets what it paid for.⁷³

⁷³ *A Guide to Best Practices for Contract Administration*, Office of Federal Procurement Policy, October 1994.

The FAR identifies over 80 separate contract administration functions.⁷⁴ The complexity of these functions varies significantly, and the frequency with which they are performed is highly dependent upon the volume and nature of the contracts/agreements being administered. Unlike the pre-award functions, which are subject to numerous procurement laws, regulations, policies and guidelines, the post-award environment is subject to far less prescription and lacks the step-by-step guidance often found in the pre-award phase. For that reason, DOE developed the *Department of Energy Reference Book for Contract Administrators*⁷⁵ to provide additional guidance to all DOE personnel involved in contract administration.

Contract administration is a collaborative responsibility. The contracting officer/administrator performs the official contract administration responsibilities required by the terms of the contract and the FAR. However, these official actions are frequently based upon factual assessments or programmatic decisions made by a variety of actors external to the contracting office. Examples include individuals in program and project management; environment safety and health; security; transportation; finance; engineering; and legal offices. Table 4 below illustrates how these responsibilities might be shared.

Table 4: Program Office/Contracting Office Roles in Contract Administration

Program Office:	Contracting Office:
<ul style="list-style-type: none"> ● Assesses contractor performance/inspects delivery of supplies/services 	<ul style="list-style-type: none"> ● Exercises contractual remedies to deal with reported performance problems ● Coordinates development of past performance report cards
<ul style="list-style-type: none"> ● Recommends needed changes to contract 	<ul style="list-style-type: none"> ● Negotiates equitable adjustment to contract and issues modification
<ul style="list-style-type: none"> ● Reviews contractors' invoices/vouchers 	<ul style="list-style-type: none"> ● Ensures contractor payments are consistent with performance and contract terms ● Approves/disapproves payment

EM senior management has described its biggest contract administration challenge as “keeping the contract current.” As of the end of July 2007, EM contracting offices were reporting 46 pending REAs/baseline changes in the aggregate amount of \$4.8 billion.⁷⁶ Processing these actions requires extensive coordination between project staff and the contracting staff. EM is developing a Standard Operating Policy and Procedures process chart that describes the roles and responsibilities of the individuals responsible for these actions.

⁷⁴ FAR 42.302.

⁷⁵<http://professionals.pr.doe.gov/ma5/MAWeb.nsf/Procurement/ReferenceBookforContractAdministrators?OpenDocument>

⁷⁶ Data from Monthly Acquisition Updates submitted by the field. Thirty-two of the requests in the amount of \$4.2 billion were associated with the WTP project.

Contract Administration by EM Field Contracting Offices

Academy staff surveyed the Field Procurement Directors at EM's four major sites (Savannah River, ORP, the Richland Operations Office, and the EMCBC) to obtain their perspectives on contract administration. They were asked to estimate the percent of time their staffs spent on specific contract administration responsibilities. The results of that survey are reflected in Table 5.

Table 5: Major EM Contract Administration Functions Performed by Contracting Office Staff

Contract Administration Function⁷⁷	Average Estimated %⁷⁸ of Contract Staff Time Devoted to the Function
Administering contract incentive provisions	16.0
Issuing unilateral contract modifications (e.g., incremental funding, contract options, etc.)	10.7
Processing REAs	10.2
Administering subcontract consent provisions (including procurement system reviews)	9.8
Processing other bilateral contract modifications resulting from contract changes or adjustments to the delivery schedule	8.5
Processing contract payments	7.7
Imposing contract remedies to deal with performance issues related to cost, timeliness or quality	6.0
Administering government property provisions	5.3
Administering contractor human resource issues	4.0
Administering contract environment, safety and health provisions	3.6
Miscellaneous administrative tasks*	18.2
	100%

* Includes headquarters reporting and data collection; cost analysis and other financial management matters; balanced scorecard; closeouts; interagency agreements; Acquisition Career Management Information System training; small business; and other general administration issues.

Academy staff also asked the Field Procurement Directors questions about their staffs' capacity to perform contract administration functions. Table 6 on the following page summarizes their responses.

⁷⁷ The first six functions consume the highest percentage of contract staff time.

⁷⁸ Percentages relate to performing contract administration responsibilities not overall staff time, which may include contract placement functions.

Table 6: Responses to Questions Concerning Staffing Resources, Training, and Experience

Staffing Questions	# of responses indicating "More than Adequate"	# of responses indicating "Adequate"	# of responses indicating "Slightly Inadequate"	# of responses indicating "Very Inadequate"
The number of on-board staff to perform the above functions is:	0	1	3	0
Staff training to perform the above functions is:	0	2	2	0
Staff experience in performing the above functions is:	0	2	2	0

The three directors who did not believe that they had an adequate number of staff indicated that they needed additional resources to administer CPIF and construction contracts and additional cost analysis support. In some cases, concerns about the number of staff were because contracting staff had been reassigned to serve on SEBs for major site procurements underway. When those contracts are awarded, the staff will return to their contracting offices, but the offices will have new major contracts to administer. EM intends to conduct a staffing analysis during the next year to ensure that adequate contracting staff resources are available at EM sites.⁷⁹ With respect to training, the directors suggested that additional training was needed in the areas of CPIF contract administration (for both procurement and technical staff), cost allowability, cost-reimbursement contracting, and the technical aspects of EM's work.

The directors' responses to questions concerning their office's working relationships with contracting officer representatives and federal project directors are shown in Table 7 on the following page.

⁷⁹ Memorandum from James A. Rispoli, Assistant Secretary for Environmental Management, to Edward R. Simpson, Director, Office of Procurement and Assistance Management, subject: Submission of Implementation Plan to Designate the Deputy Assistant Secretary form Acquisition and Project Management as Head of Contracting Activity for the Office of Environmental Management, August 31, 2007, page 14.

Table 7: Responses to Questions Concerning Working Relationships

Working Relationship Questions	# of responses indicating “Very Effective”	# of responses indicating “Effective”	# of responses indicating “Adequate”	# of responses indicating “Ineffective”
How would you characterize you and your staff’s working relationship with the federal project directors?	2	2	0	0
How would you characterize you and your staff’s working relationships with the contracting officer representatives?	2	2	0	0

Finally, in response to a question about how to improve contract administration, the directors provided a variety of suggestions, including:

- better alignment of DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and acquisition strategies and processes
- implementation of specific processes related to contract administration
- clear communication of direction and consistent follow through from the DAS for Acquisition and Project Management
- clear EM direction/policy on risk management as it relates to contract administration
- revised policy on contingency
- increased autonomy, authority, and resources for field contracting
- less headquarters micromanagement
- more time spent at the site by headquarters or EMCBC staff involved in pre-award acquisition in order to become familiar with the unique aspects of the site and the project (e.g., bargaining unit agreements, benefit plans, and stakeholder involvement)
- improved coordination of business clearance comments from EM or the Office of Management

EM Headquarters Oversight of Field Contract Administration

EM’s Office of Contract and Project Execution has oversight responsibility for field post-award contract administration. Currently, that oversight is accomplished through:

- reviews of proposed contract modifications and extensions, REAs, fee determinations, and subcontract consents, which are subject to the DOE Office of Management’s business clearance process

- monthly conference calls with all field offices during which the status of the following items are discussed:⁸⁰
 - outstanding issues on contracts under administration
 - pending/anticipated REAs
 - non-REA major scope or funding changes
 - contractor incentive fee payments
 - status of government-furnished services or items (GFSI)
 - contractor workforce issues
 - pension and medical benefits funding requests versus budget
 - small business goals and performance
 - contract closeout status
 - DOE headquarters actions/decisions needed
 - other field manager issues or concerns

These activities have been performed on an unofficial basis pending approval of EM's HCA delegation request. Now that the HCA has been approved, the Office of Contract and Project Execution also will:

- manage resolution of issues related to GFSI and site contractor workforce restructuring
- consolidate reporting of Field Procurement Directors' compliance with DOE Order 361.1A, *Acquisition Career Development Program*
- work with OPAM to schedule and conduct cross-functional assessments of contract management and administration at EM sites
- serve as liaison between the field and the Office of Legacy Management regarding contract workforce restructuring⁸¹
- designate contracting liaisons for EM and non-EM field sites who support major acquisitions by:
 - providing ready access to all EM contracts, including contract modifications
 - having knowledge of and documenting assigned contract management plans
 - having knowledge of performance-based incentives and fee data for assigned contracts
 - interacting with site contracting staff and Office of Management site-specific representatives
 - having knowledge of GFSI and requirements on a fiscal year basis for assigned contracts
 - reviewing business clearance documents

⁸⁰ The field submits reports in advance of these calls.

⁸¹ These responsibilities relate to the planning, coordination, and transition activities required to ensure that contractor entitlements to retirement pensions and post retirement benefits are preserved during the transfer of site management responsibility from EM to the Office of Legacy Management.

- participating in teams performing assessments of contract management practices and processes
- participating in post-award IPTs⁸²

Partnership for Public Service Pilots

EM has chosen to participate in the Partnership for Public Service's Acquisition Innovation Project, which was conceived by senior procurement executives from 12 federal agencies and 14 private sector organizations. The project chose to focus on contract administration and identified three keys to successful post-award contract management:

- a sustainable and accountable partnership
- an infrastructure for success
- a system of measures to monitor and improve performance⁸³

EM's West Valley and Moab sites are pilots for the project. They recently have awarded support contracts that represent transitions from an M&O to a CPAF contract environment and offer opportunities to pilot different contract "launch" strategies and communication approaches in the initial stages of contract performance. Some field staff reported that in some cases the contract does not contain all the requirements that are ultimately imposed. One individual indicated that there are "embedded expectations" that are not always translated into contract language. These issues will be addressed during the pilot program. Training in CPAF contracts has been provided to the Moab site office and is projected for West Valley in December 2007. EM staff report that the early focus on communication has been the most helpful in transitioning to a decidedly different contracting culture.

Early results from the pilots will be shared with the Partnership in the October-November 2007 timeframe. Although involvement with the Partnership will end at the point, EM intends to continue with the initiative until its completion. EM believes that the lessons learned from the pilots will have broad applicability throughout the complex, and expects that "site personnel will be provided tailored contract training, information on the specific terms and conditions of newly awarded contracts, including information on roles and responsibilities, appropriate interactions with contractor counterparts, contractor performance incentives, and identification of key Federal and contractor points of contact."⁸⁴

⁸² Memorandum from James A. Rispoli, Assistant Secretary for Environmental Management, to Edward R. Simpson, Director, Office of Procurement and Assistance Management, subject: Submission of Implementation Plan to Designate the Deputy Assistant Secretary for Acquisition and Project Management as Head of Contracting Activity for the Office of Environmental Management, August 31, 2007 pages 20-21.

⁸³ *Creating Momentum in Contract Administration, the Acquisition Innovation Pilot Handbook*, Partnership for Public Service, November 2006.

⁸⁴ Memorandum from James A. Rispoli, Assistant Secretary for Environmental Management, to Edward R. Simpson, Director, Office of Procurement and Assistance Management, subject: Submission of Implementation Plan to Designate the Deputy Assistant Secretary for Acquisition and Project Management as Head of Contracting Activity for the Office of Environmental Management, August 31, 2007, page 13.

Conclusions and Recommendations

The size, complexity and inherent uncertainties that characterize EM's major projects will continue to tax the organization's project management and contract management capacities into the future. The movement away from the more traditional M&O contracts to CPIF and other performance-based approaches has placed greater demands on staff and the need to deal with contractual changes in a timelier manner. EM has made great strides in the project management area to develop more realistic project baselines and monitor performance against them.⁸⁵ However, the Panel believes that EM needs to significantly improve the coordination between the federal project directors and the contracting office to ensure that the contract implications of a contemplated baseline change are well understood, and that both offices work together to realign the baseline and the contract in a timely manner. With oversight responsibilities for EM contracting and project management, the DAS for Acquisition and Project Management is well positioned to exercise leadership in this area.

The Panel recommends that the DAS for Acquisition and Project Management develop written guidance that clearly describes the roles, responsibilities, and processes for executing baseline changes that meet EM and DOE project management requirements and modifying contracts in a timely manner. The guidance should be supplemented by interactive training sessions (onsite or teleconference) that allow site personnel the opportunity to ask questions about the guidance.

Given EM's contract administration workload, the Panel questions whether current contract staffing levels are adequate. With the increased use of CPAF and CPIF contracts and performance-based incentives, contract administration responsibilities have grown and the work has become more complex. The contracting staff is already struggling to process REAs and other baseline change actions timely. And EM's efforts to foster increased small business prime opportunities will only add to the contract administration workload. The Panel endorses the OPAM business process reengineering team's proposal to study the adequacy of DOE contracting staffing and EM's intention to conduct a staffing analysis during the next year. But it believes that the timeframe for completing the analysis of EM's contracting offices needs to be advanced in order to identify staffing needs and initiate recruitment as soon as possible.

The Panel recommends that the timetable for EM to complete the staffing analysis of its contract operations be advanced to December 2007.

The Panel commends EM's participation in the Partnership for Public Service's Acquisition Innovation Project and its intention to share the lessons learned with other sites. If the strategies for communication and contract launch can benefit small projects, it is likely that they will add significant value during the early transition stages of EM's major acquisitions that are yet to be awarded.

⁸⁵ See the Chapter 4, Project Management, for more information on this subject.

The Panel recommends that the DAS for Acquisition and Project Management ensure that appropriate launch strategies are developed for each major EM acquisition that take full advantage of the lessons learned from the Moab and West Valley pilots of the Partnership for Public Service's Acquisition Innovation Project.

CHAPTER 4

PROJECT MANAGEMENT

Because EM’s mission of environmental remediation and risk reduction is accomplished primarily through contractors, the acquisition process is critical to EM’s success. However, that process is just one piece of EM’s overall project management regime. Once a contractor has been selected and a contract awarded, EM is responsible for managing and overseeing the conduct and completion of work in accordance with predetermined cost, schedule, and scope. While EM has modified its approach to project management and contractor oversight over the years, Assistant Secretary Rispoli’s tenure has brought a heightened emphasis on proactive management of contractors that reflects EM’s long-term mission at various field sites. Drawing on his tenure as Director of the Office of Engineering and Construction Management (OECM),⁸⁶ Assistant Secretary Rispoli has had EM apply to the operating and cleanup projects that characterize much of the EM portfolio, the project management principles contained in Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, which was developed to provide comprehensive project management procedures for DOE line-item construction projects. This initiative to “projectize” the EM portfolio includes building an infrastructure and tools to support more rigorous oversight of project performance; the development of stable cost and schedule projections for EM projects; standardized training for EM’s federal project directors (FPDs) and other federal project staff; and a host of other initiatives.

The Panel began its examination of EM’s project management activities by reviewing the National Research Council’s multi-year effort to assess project management capabilities throughout DOE, which found problems related to project planning, cost estimation, baseline development, and risk management.⁸⁷ In an effort to identify lessons learned that could have applicability elsewhere in the complex, the Panel also examined a project where EM’s project management activities led to the successful cleanup of a site—Rocky Flats. Rocky Flats has been described as one of DOE’s greatest cleanup achievements, with the site closing months early and well under cost.⁸⁸

The Panel then began to assess the many facets of project management and how they are carried out within EM. Among the areas that the Panel examined during the course of the study were the systems employed to manage projects; cost estimation; procedures for managing safety and implementing quality assurance; FPD training and certification; headquarters oversight and project metrics; and the management of project risk and uncertainty. This chapter presents the

⁸⁶ OECM is a Department-level entity charged with supporting and assessing acquisition and project performance, as well as facilities and infrastructure, throughout DOE.

⁸⁷ The National Research Council is an arm of the National Academies that carries out much of the research and project work performed by those organizations. A discussion of its review of DOE’s project management activities is included in Appendix C, Section I, “Review of National Research Council Studies.”

⁸⁸ More information about the Rocky Flats project is available in Appendix B, Section VII, “Lessons Learned From Rocky Flats.”

Panel's findings related to EM's project management activities, the proposals made by the Panel during the course of this study, and the status of EM's actions to implement them.

MANAGING THE EM PROJECT PORTFOLIO

The 89 projects currently in the EM portfolio can be divided into three categories: (1) cleanup projects, which focus on remediating potentially harmful environmental conditions created by the former weapons program; (2) operating projects, which track the operation of facilities that process certain types of waste into forms that reduce or isolate potential risks; and (3) construction projects, which consist of the construction of new facilities to process hazardous waste and other materials. Although cleanup and operating projects constitute 83 of the 89 projects in EM's portfolio, the construction projects—such as the Salt Waste Processing Facility at the Savannah River Site in Aiken, SC and the Waste Treatment and Immobilization Plant (WTP) at the Office of River Protection (ORP) in Richland, WA—are among the most expensive and technically complex.

DOE Project Management Guidance

As noted above, project management within DOE is governed by DOE Order 413.3A.⁸⁹ The Order includes several distinctive features, such as a mandate to validate performance baselines⁹⁰ for all EM projects, and the use of decision "gates," known as critical decision (CD) stages, which ensure timely oversight and accountability of projects.⁹¹ Tailoring EM work to DOE guidance has presented a challenge. Many of the requirements in Order 413.3.A, which was designed for construction projects, are not clearly applicable to the operating and cleanup projects that are most common to EM. Despite these difficulties, there appears to be wide consensus within EM that Order 413.3A and related guidance documents, as implemented by the Assistant Secretary, have had a substantial, positive effect on the quality of project management at EM. Currently, EM is pursuing a new round of efforts to further projectize its portfolio, including mandating that all EM projects produce and execute against validated near-term baselines, as well as produce reasonable out-year funding estimates.⁹² EM anticipates that this effort will bolster the overall credibility of the program within DOE, as well as in the eyes of external parties such as congressional appropriators; federal and state regulators; and local stakeholders and Native American tribes.

⁸⁹ <http://www.directives.doe.gov/pdfs/doe/doetext/neword/413/o4133a.html>. Appendix C, Section II, "Managing the EM Project Portfolio" includes further discussion of Order 413.3A.

⁹⁰ Order 413 defines a performance baseline as: "The collective key performance, scope, cost, and schedule parameters, which are defined for all projects. Performance Baseline includes the entire project budget (total cost of the project including contingency) and represents DOE's commitment to Congress."

⁹¹ Prior guidance documents also relied on a series of decision gates, but the criteria for passing through the CDs outlined in Order 413.3A are less subjective than in prior documents. A more detailed explanation of the CD stages laid out in Order 413.3A is available in Appendix C, Section II, "Managing the EM Project Portfolio."

⁹² A memorandum issued jointly by Assistant Secretary Rispoli and OECM Director Paul Bosco in April 2007 defines a near-term baseline as covering "a minimum of five years or...the period of performance for the current contract if it exceeds five years."

Baseline Management Framework

Sites are responsible for developing detailed project baselines for all of their projects. Projects that have common attributes, such as a common assumed end state, geographic location or activity type, are typically grouped within a Project Baseline Summary (PBS), which includes important summary-level information and performance data that is used both within and outside of EM. Some EM headquarters staff expressed concerns about the baseline structure, noting that PBS definitions often can encompass a large number of sub-projects, thus masking performance problems in individual aspects of a large project. Likewise, many field staff were concerned that reporting at the PBS level as currently constructed did not give headquarters an adequate picture of the work being done at the sites.

In its January 2007 Observations Paper, the Panel shared this concern, but did not make a proposal, recognizing that altering EM's overall PBS structure would present a major distraction to EM's current activities, and that any changes in that structure would cause significant problems in budget presentation, particularly the historical comparability of budget submissions across fiscal years.⁹³ The Panel did suggest, however, that EM leadership assess whether its project oversight activities would benefit from establishing some sub-PBS unit of analysis that would help bring the field and headquarters into harmony regarding project reporting and oversight. As of November 2007, EM was continuing an ongoing effort to identify subprojects below the PBS level.

FEDERAL OVERSIGHT OF CONTRACTOR PERFORMANCE

Much of the work performed by EM's field staff is focused on oversight of contractor performance. EM's ratio of contractors to federal employees (about 31 to 1),⁹⁴ as well as the diverse and complex nature of the various sites located across the complex, make EM one of the most contractor-reliant agencies in the federal government today, and necessitate a strong oversight regime.

As noted elsewhere in this report, EM's prior leadership had instructed federal field staff to "manage the contract, not the contractor," with the result being a shift away from intensive federal management of contractor activities. Since taking over the leadership of EM, Assistant Secretary Rispoli has replaced that philosophy with one where federal staff take a more proactive role in the management of EM projects, with the contract serving as the vehicle for these management activities. Accordingly, EM has undertaken steps to enhance the project management capacity of its federal staff, and has indicated its intention to continue moving forward in this regard. The Panel endorses these initiatives, but cautions that project management should not entail federal staff providing technical direction to the contractor on how to perform the work. In a performance-based environment, project management efforts should

⁹³ Staff of the House EWD Appropriations Subcommittee have expressed a similar concern.

⁹⁴ Approximately 1,100 EM site staff manage a contractor force of about 34,000, for a ratio of about 31 contractors per federal employee.

focus on developing approaches and tools to assess and monitor the contractor's progress in meeting specific performance objectives and standards that are contained in the contract.

Use of Earned Value Management

In order to track progress on each PBS and its constituent sub-projects and control accounts, EM requires its contractors to employ an Earned Value Management System (EVMS), which analyzes and reports deviations from baseline projections. The complex-wide adoption of EVMS has been a critical component of EM's initiative to projectize its project portfolio. The burden of establishing and operating a working, verified EVMS is entirely on the contractor responsible for the work being monitored.⁹⁵

A critical element of EVMS' effectiveness is the quality of the system itself. According to DOE Order 413.3.A, OEMC must certify each contractor's EVMS.⁹⁶ Once a contractor's EVMS has been certified, however, EM has no formal mechanism to ensure that it remains compliant with those standards throughout the life of the project. The Panel also found that EM has not taken full advantage of EVMS' capability to produce a Contract Performance Report (CPR), which provides project status information in five different reporting formats that can be used to help manage project baselines. **In its January 2007 Observations Paper, the Panel proposed that EM require its contractors to produce EVMS' five standard Contract Performance Report reporting formats. Further, the Panel proposed that EM develop a mechanism to monitor contractors' EVMS in order to ensure the integrity of the data produced.**

In July 2007, EM's DAS for Acquisition and Project Management issued a memorandum mandating that all EM projects report EV data using some standard CPR formats, and that sites develop an EV surveillance plan by October 1, 2007 that "will establish a plan for the site to review the contractor's earned value (EV) system on a monthly basis[.]". As of November 2007, all sites had provided EM headquarters with an update on the status of these plans; a summary and analysis of them will be available by the end of December 2007. EM also revealed plans to institute a monthly report, prepared by federal staff for the FPDs at each site, on EV and other performance metrics. EM plans to have a template for this report by December 2007 and hopes to implement the actual reporting sometime in 2008.

Actions to Enhance EM Staff Capacity to Manage Projects

Aside from EVMS, EM headquarters has not developed any other standardized systems for FPDs and their staffs to use to manage project performance. As a result, many FPDs throughout the complex have devised and deployed a wide array of their own "desk drawer" systems for managing project performance on a day-to-day basis. Some senior EM headquarters managers expressed a desire for EM to supply FPDs with a standard "toolbox" of project management tools to supplement EVMS.

⁹⁵ A more detailed explanation of EM's use of EVMS is available in Appendix C, Section III, "Federal Oversight of Contractor Performance."

⁹⁶ As of September 2007, less than 40 percent of EM contracts were being executed under a certified EVMS. The other contractors' systems were in various stages of the certification process.

In its August 2007 Observations Paper, the Panel expressed concern about the time-consuming and duplicative nature of FPDs constructing their own performance management systems. It proposed that EM standardize and integrate project performance management tools across the complex, particularly those that supplement or are integrated with the Earned Value Management System. The Panel further proposed that EM conduct a complex-wide assessment to ascertain what tools FPDs are now using to manage project performance on a day-to-day basis. The results of this assessment should form the basis for developing a standardized project management “toolbox.” The Panel recognizes that EM field sites have a diverse missions and activities and, therefore, requirements for project performance management tools may vary across the complex. Thus, it would be unwise to reduce project managers’ flexibility by restricting the range of tools that are at their disposal. However, the Panel believes that EM headquarters should play a more active role in providing project managers with a standard array of tools from which to choose and assisting in the development of new tools, rather than leaving project managers to “reinvent the wheel.”

One area where EM already has taken action is in the area of scheduling. Work at all EM sites is governed to some extent by agreements with local regulatory, civic, tribal, or other organizations. As a result, many FPDs must manage projects in compliance not only with the project baseline, but with a mandated milestone schedule. Academy staff found several instances where FPDs either had no formal scheduling tools that incorporated external project milestones, or relied on self-made systems that did not include logic ties between external milestones and project tasks. At the same time, headquarters managers reported difficulties in coordinating activities, such as shipping waste between sites, due to the lack of a standardized scheduling format for EM field sites. To address project scheduling issues, EM has undertaken an initiative to standardize project scheduling data⁹⁷ across the EM complex and integrate them into a headquarters-level Environmental Management Integrated Schedule (EMIS). EMIS was operational as of October 2007 and will continue to be updated with additional functionality.

In addition to lacking standard tools, the Panel found that most FPDs at EM field sites lacked sufficient staff with the required training to perform in-depth analysis of EV data. As discussed in Chapter 5, Human Capital Management, EM’s federal staffing levels are low relative to other agencies with similar missions, such as the U.S. Army Corps of Engineers (COE) and the U.S. Naval Facilities Engineering Command. Academy staff found this relative disparity to be particularly pronounced in the area of project controls personnel. Within the context of EM, the field of project controls encompasses a number of key responsibilities related to managing project performance. Very few project control officers (PCOs)—the job classification that includes training in in-depth EV analysis—have been deployed in the field. This remains a substantial weakness in the quality of EM project management.

Cost estimation also is a critical skill area within EM, as estimates of project cost often drive EVMS baseline assessments. Although OECM’s standard audit of an onsite EVMS includes some verification of the contractor’s cost estimation practices, in recent years, EM has not had a staff of internal cost estimators capable of analyzing cost estimates over the life of a project. The

⁹⁷ Project scheduling data in this instance are distinct from EV-based cost and schedule data, although both will ultimately be part of the standardization effort.

Panel believes that EM requires a robust, internal cost-estimating capacity in order to manage its contracts effectively and verify the cost estimates provided by contractors at the field level. In its **January 2007 Observations Paper**, the Panel proposed that EM develop an internal cost-estimating capacity in EM headquarters as well as at EM's field sites. The Panel added that EM should expand the work scope of its existing cost-estimating contractors to have them develop training and mentoring programs for EM's workforce.

EM leadership is currently focused on rebuilding an internal cost estimating Center of Excellence, and in November 2007 selected the EMCBC as the location for a new complex-wide federal cost estimating resource. The EMCBC has hired a veteran cost estimation subject matter expert to provide initial field support and policy direction, and has requested additional FTE in order to fully staff this function. In addition, Academy staff have been informed that DOE's Office of the Chief Financial Officer is establishing a Department-wide cost estimation group. This group will have responsibility for training in cost estimation, and will encourage federal staff to pursue certification from external bodies, but is unlikely to establish any kind of cost estimating certification internal to DOE.

With respect to other shortcomings in the staffing level and/or expertise of EM's project management workforce, EM leadership expects that they will be addressed by a comprehensive effort now underway. In March 2007, EM contracted with the firm Project, Time & Cost, Inc., through an interagency agreement with COE, to identify and fill skill gaps in its project management capacity at sites across the EM complex and, ultimately, to federalize these skills into the EM workforce. EM leadership expects this initiative, Best-In-Class Project and Contract Management, to produce an overall improvement in the quality and rigor of project management at EM field sites.⁹⁸

The House EWD Appropriations Subcommittee has expressed some preliminary support for EM to hire additional staff,⁹⁹ and interviews with EM field staff revealed enthusiasm for the initiative. However, staff also expressed strong skepticism as to whether the effort can overcome the formidable human capital challenges facing EM; in particular, the challenges of "growing" experts in professions that can often require decades of training and experience to master, such as cost estimation and project scheduling, and hiring enough personnel to fill identified skill gaps. The Panel believes that the Best-In-Class initiative, if conducted as planned and implemented fully, will help raise the caliber of EM's project control officer staff and the overall quality of its project management activities. However, the Panel shares the field staff's reservations about whether EM will have the needed FTE ceiling and be able to recruit enough personnel with the subject matter expertise to fill the gaps identified by the assessment.

⁹⁸ More information on the responsibilities associated with the project control officer and cost estimation functions, as well as a fuller explanation of the Best-In-Class initiative, is available in Appendix C, Section III, "Federal Oversight of Contractor Performance."

⁹⁹ The House version of the 2008 EWD Appropriations Bill notes that "the oversight of contractor performance by the federal workforce is critical to ensure that taxpayers are getting good value for their money," and accordingly, "provid[es] resources to improve this oversight, such as increasing the federal staff by 120 positions in the areas of contract management and project management." H. Report 110-185. *Energy and Water Development Appropriations Bill, 2008.* p. 116.

The Panel recommends that EM's leadership begin a concerted effort to determine how it plans to meet the human capital and other logistical challenges inherent in the Best-In-Class Project and Contract Management initiative, and communicate its plans to project managers and other field personnel.

EM HEADQUARTERS OVERSIGHT OF PROJECT PERFORMANCE

Although federal staff at EM field sites have primary responsibility for the day-to-day management of EM projects, EM headquarters is responsible for disseminating policy and guidance and oversight. EM, as well as other relevant DOE offices, perform many of their oversight duties by conducting visits to EM field sites. However, the Panel focused mainly on oversight mechanisms that EM headquarters managers rely on when they are not in the field: automated systems, Quarterly Project Reviews (QPRs), and rating metrics.

Automated Reporting Systems

EM's Integrated Planning, Accountability and Budgeting System (IPABS) is an electronic system that integrates EM's planning, budget, and execution business processes. Today, IPABS provides support for much of EM's planning and execution work. It functions as a single data source for EM, and is used predominantly as a management tool by headquarters managers. As discussed in the next section, "Quarterly Project Reviews," in its January 2007 Observations Paper, the Panel proposed that EM make some modifications to IPABS. EM agreed with the Panel's proposal, but an IPABS Steering Committee subsequently determined that a wholesale revision of the IPABS system was needed. The Panel was pleased to see the efforts underway to improve or replace IPABS, but was concerned that the Steering Committee had not generated a formal requirements document that outlined system functions. Without such a document, the Panel feared that the Committee risked simply grafting additional modules and features onto a system that had already been expanded well beyond its intended uses. **In its August 2007 Observations Paper, the Panel proposed that the EM IPABS Steering Committee produce a formal requirements document that defines the functional requirements for replacing or modifying IPABS.** EM accepted this proposal and expects to have the requirements document completed by December 2008.

The accuracy of IPABS data are dependent on both the quality of the EV data produced by EM contractors and the ability of field staff to upload EV data to IPABS in a correct and timely manner. **In its January 2007 Observations Paper, the Panel proposed that EM modify its project management training to include an increased focus on the capabilities and limitations of its tracking and reporting systems—EVMS, IPABS, and the Project Assessment and Reporting System (PARS).¹⁰⁰ The Panel further proposed that EM develop a mentoring program where seasoned FPDs work with less-experienced FPDs in the use of**

¹⁰⁰ PARS is a DOE system that is the chief mechanism used to report project status and assessment information to DOE senior managers and key program stakeholders. PARS is based on EVMS specifications, and is populated with data electronically by the Project Execution module in IPABS.

these systems, and that EM include this mentorship as a standard in FPDs performance appraisals.

EM agreed that more training is needed, and will provide it in conjunction with a revised IPABS system.¹⁰¹ EM did not, however, accept the Panel's proposal for including mentoring as a standard for FPD performance evaluations. EM leadership does not believe that holding FPDs accountable for this aspect of project performance is appropriate at this time.

Quarterly Project Reviews

EM's QPRs are a key mechanism used by headquarters to oversee projects. QPRs were initiated by former Assistant Secretary Paul Golan, and have been continued with a revised format by Assistant Secretary Rispoli. The QPRs are an important feedback mechanism for senior leadership, and sites view them as opportunities to raise concerns or issues relating to their projects. Assistant Secretary Rispoli and his management team also have increasingly used QPRs to coordinate organization-wide approaches to project challenges between relevant offices in EM headquarters and field organizations, especially vis-à-vis negotiations with outside parties, such as contractors, regulators, and congressional appropriators.¹⁰²

Academy staff attended QPRs held in February, May, and August of 2007, and discussed the QPR process with EM headquarters and field staff. In general, the institution of QPRs is widely perceived as a positive development, although attitudes in the field are mixed as to the worthiness of the effort that goes into preparing QPR presentations, as well as the format itself, which is mandated by EM headquarters. Several FPDs interviewed expressed skepticism about whether the information conveyed by QPR presentations could be properly understood by, or useful to, headquarters managers in monitoring project performance.

After the February QPRs, EM made several changes to the QPR procedure, including increased automation of QPR report preparation, the inclusion of an FPD project assessment to replace the OECM assessment (discussed in the section of this chapter, "Metrics for Assessing Project Performance"), the inclusion of an integrated project schedule, and the extension of the QPR schedule itself to allow more time to address issues that arise during QPR sessions.

One issue of special concern to the Panel was the integration of budget and funding metrics into the QPR process. During the February QPRs, Academy staff observed that discussions at QPRs focused almost exclusively on performance-related data, with little if any comparison of project performance against fiscal year project funding constraints. Several EM officials indicated that budgetary concerns could easily be incorporated into QPR discussions without unduly merging the two areas, and producing projections of project performance data against budget data is a standard practice at the Department of Defense (DoD). Moreover, increased attention to funding

¹⁰¹ EM, citing ongoing DOE efforts to entirely replace PARS, has declined to provide any EM-specific PARS training at this time.

¹⁰² A more detailed explanation of QPR format and procedures can be found in Appendix C, Section IV, "EM Headquarters Oversight of Project Performance."

issues could help EM field sites and headquarters adopt a more coordinated, proactive approach to reprogramming requests.

In its January 2007 Observations Paper, the Panel proposed that EM modify IPABS to enable it to compare EVMS cost and performance information with budget data, and that the results of this analysis be included in future QPR reports and other project status documents.

EM has taken steps to implement the Panel's proposal. August QPR presentations contained a simple comparison of fiscal year funds versus expected project costs, and Academy staff observed that this spurred enhanced discussions of funding issues during the sessions. EM now has committed to include an enhanced budget presentation, including explicit comparison of EV data and expected funding, in the March 2008 QPRs.

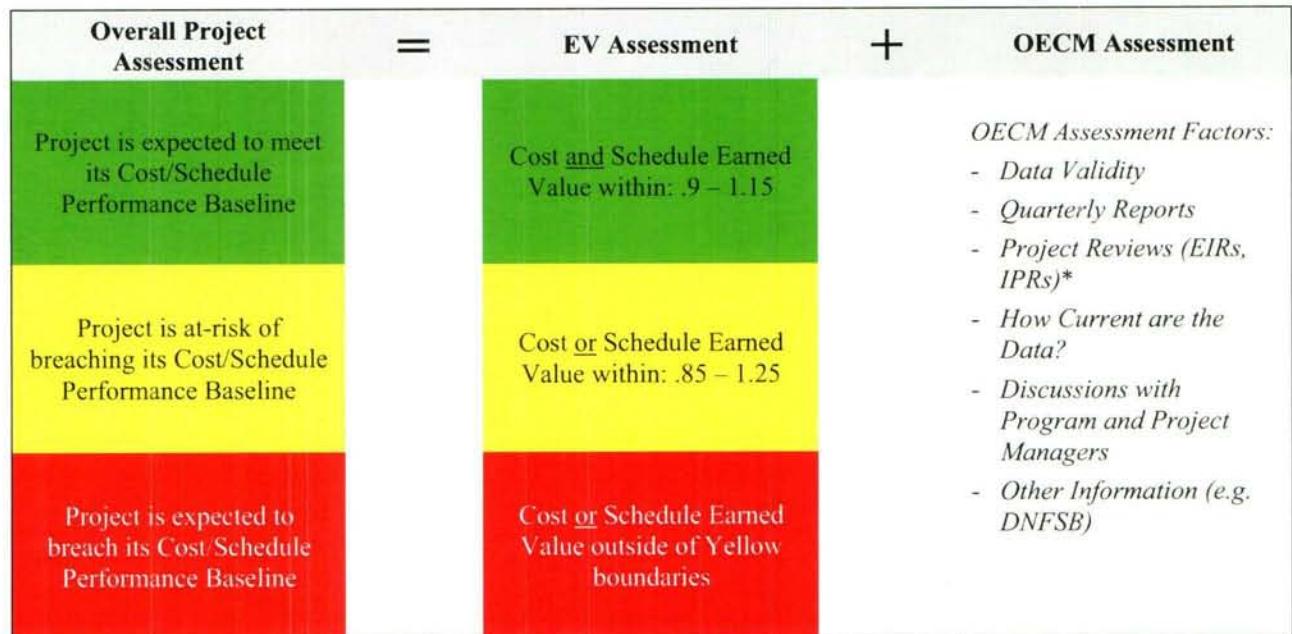
Metrics for Assessing Project Performance

One of the key tools EM headquarters managers have used to gauge project performance is the color assessment rating scheme employed by OECM. On a monthly basis, OECM evaluates each project in the EM portfolio, using EV performance as well as a number of other factors, such as the timeliness of EV data, results of independent reviews, and discussions with project managers.¹⁰³ Based on this assessment, OECM issues a project rating of 'green,' 'yellow,' or 'red.' Figure 2 on the next page depicts OECM's rating process. EM headquarters officials report that these ratings are useful for assessing project performance insofar as they give the DOE Deputy Secretary and EM managers an at-a-glance indication of which project may require increased management attention. But they also note that the color assessments are limited by some lack of comparability across EM projects.¹⁰⁴

¹⁰³ Order 413.3A indicates that OECM must perform this assessment only for "projects having a Total Project Cost greater than or equal to \$100M and Environmental Management Clean-Up Projects having an Total Project Cost greater than \$400M." However, nearly all projects in the EM portfolio fit within this criterion, and are thus assessed by OECM.

¹⁰⁴ A further explanation of how OECM metrics are derived is available in Appendix C, Section IV, "EM Headquarters Oversight of Project Performance."

Figure 2: OECM Color Assessment Scheme



* EIRs are External Independent Reviews. IPRs are Independent Project Reviews.

Despite the limitations of the OECM color assessments, because they are presented to and may be acted on by the Deputy Secretary, these often are the metrics to which EM is held accountable, regardless of how well the assessment represents the actual health of a given EM project. Accountability for these ratings generally flows down to the field level, to individual site managers or even, in some cases, to individual FPDs. Many site staff interviewed believe that OECM color assessments have an excessive influence on the attention paid to a project by top EM managers relative to the amount of information the assessments truly convey about a project's performance. Much of this seems to stem from a lack of definitions associated with the various color ratings. In particular, both 'red' and 'yellow' assessments are interpreted as a sign that intervention by EM headquarters is required, particularly because they may in turn prompt further inquiries by the Deputy Secretary.

Project performance ratings are an essential tool for headquarters managers, and OECM color ratings serve an important function in providing an at-a-glance assessment of a large and diverse project portfolio. However, the Panel does not believe that EM is well served by the current level of emphasis placed on the OECM color-coded assessments of project performance. The preservation of clear lines of accountability for project performance within EM requires that assessment metrics are clearly defined, and that the definitions are clearly communicated throughout the complex and accepted by managers and staff. The lack of guidelines for when EM headquarters intervention is or is not required for 'yellow' versus 'red' projects has created disincentives to the field to report performance problems until headquarters assistance is judged to be absolutely necessary. Some field staff reported that responding to such interventions often impaired FPDs' ability to repair or prevent project setbacks. **Accordingly, in its August 2007 Observations Paper, the Panel proposed that EM examine its procedures for responding to, and holding field personnel accountable for, the color assessments of projects.** These

procedures should address, but need not be limited to, concrete definitions for the “meaning” of each assessment color.

As of this writing, OECM is leading an overall effort to more clearly define and differentiate ‘red’ and ‘yellow’ assessments, particularly in its monthly reports to the Deputy Secretary. This effort is expected to conclude by the end of December 2007. EM has revealed plans to build on OECM’s initiative with an EM-specific effort to better define roles and interpretations surrounding color assessments, to be completed approximately one month following the conclusion of the OECM effort.

The Panel also examined the granularity of EM’s project assessment metrics. EM project managers in the field as well as EM headquarters managers expressed the desire for a high-level measure of project performance that provides a more detailed assessment. The Panel concurred, noting that the color-coded assessments do not convey enough detail about individual projects to be an appropriate standard of accountability for EM FPDs and site management, and they do not provide an apples-to-apples comparison of projects across the EM complex as the color designations might imply. Accordingly, Academy staff explored several alternative schemes for assessing project performance at the PBS level, including a “Critical Success Variables” model based on an external independent review performed at the Fernald Closure Site.¹⁰⁵ This scheme relies on metrics—critical success variables—such as cost, schedule, regulatory issues, safety, etc. that can be customized to suit the unique features of each EM project, either at the PBS or sub-PBS level. Figure 3 is an example of how this performance assessment model might look for an EM project.

Figure 3: “Critical Success Variables” Model¹⁰⁶

Critical Success Variable	PBS 01	PBS 02	PBS 03	PBS 04
Cost				
Schedule				
Tech. Scope				
Quality				
Regulatory				
Management				
Procurement		N/A		N/A
Safety				
FY Funding	\$250M	\$1.86B	\$736M	\$19M

¹⁰⁵ More information about all of these models is available in Appendix C, Section IV, “EM Headquarters Oversight of Project Performance.”

¹⁰⁶ All project data are fictional.

While these assessment metrics would not substitute for more detailed measures of project performance, such as EV performance data, the Panel believes that EM headquarters managers would benefit from more refined performance metrics that provide enhanced granularity and detail and that can be more useful for comparative purposes. In its August 2007 Observations Paper, the Panel proposed that the DAS for Acquisition and Project Management work with each field office to produce project-specific success metrics. These metrics should take into account the type of work being performed and the specific facilities involved and technologies deployed, and should ideally be devised in collaboration with relevant contractors. The Panel proposed that these metrics be reported on a quarterly basis as part of the EM QPR presentation format.

EM leadership agreed that a more detailed project performance assessment scheme would be appropriate, and informed Academy staff that it planned to base these new metrics on the Fernald example, as well as a similar model in use at the Rocky Flats closure sites. It hopes to include the new assessment scheme in the monthly FPD reports currently being developed (see the earlier section on “Use of Earned Value Management”). EM also plans to include these metrics in the QPR format, but the monthly FPD reports will be the primary vehicle for using them to evaluate project performance.

MANAGING TECHNICAL COMPLEXITY AND PROJECT RISK

The EM project portfolio has a relatively high degree of uncertainty, risk, and technical complexity, which is due to a number of factors:

- Many EM projects involve the remediation of highly toxic and radioactive materials that often require the construction or operation of facilities to process the materials into less harmful forms. Many of these projects involve first-of-a-kind construction design and facilities engineering.
- Many environmental remediation projects also require EM to develop new technologies in the areas of chemical engineering and nuclear physics. The uncertainty associated with transferring these new technologies from a laboratory environment to large-scale implementation is considerable.
- Many of the former weapons production facilities where EM performs its work did not keep detailed records of the environmental risks they introduced into local environments. At many sites, EM found additional contaminants that were not anticipated in a project’s original definition, necessitating major revisions to technical scope and, consequently, to baseline cost and schedule.

Inadequate planning for these risks and uncertainties can have a significant impact on a project. The WTP, which has seen project cost and schedule expand far beyond original projections, is a very visible case in point. A principal cause of the project’s problems was the optimistic treatment of the uncertainty and risk associated with the design of novel technologies for a large, complex, first-of-a-kind, nuclear-chemical plant.

Managing the Development and Implementation of Technologies

Observers both within and outside of EM have indicated that EM needs a better strategy to address the technological complexity of its projects. In accordance with provisions in the 2007 House EWD Appropriations Bill, EM developed a Technology Roadmap, which attempts to define the role of the engineering and technology functions within the organization. The Roadmap also identifies and categorizes EM's engineering and technical risks. In February 2007, the National Academy of Sciences undertook a project to support this initiative, and is expected to release a formal report sometime around June 2008.

The issue of technology maturity, i.e., whether a technology has been sufficiently developed to be implemented, has been a major challenge for EM. EM has had no common technical vocabulary to facilitate programmatic direction and coordination of technological needs assessment, development, and implementation at and across project sites. In October 2006, Academy staff met with GAO staff who were in the midst of a study that found that technological immaturity had contributed to cost and schedule overruns for some of DOE's major construction projects, including some of the most costly projects within EM. Both staffs were exploring EM's potential use of Technology Readiness Levels (TRLs), which are metrics for quantifying the maturity of a given technology, as a means to better address the technical complexities of its projects.¹⁰⁷

In consultation with GAO staff,¹⁰⁸ the Panel proposed in its January 2007 Observations Paper that EM implement Technology Readiness Levels and institute a formalized process for assigning ratings to proposed technological solutions. In March 2007, GAO issued its report in which it recommended that DOE "evaluate and consider adopting a disciplined and consistent approach to assessing TRLs for projects with critical technologies."¹⁰⁹ GAO indicated that employing TRL would facilitate greater communication across field sites and potentially pave the way for broader strategic thinking.

EM agreed with this proposal, and has taken several steps towards implementation. EM initiated a pilot Technology Readiness Assessment (TRA) process, focused primarily on the WTP and associated projects at the Hanford Site, and ORP staff developed customized TRA criteria for WTP.¹¹⁰ When Academy staff visited the Hanford Site in April 2007, ORP project and engineering staff were enthusiastic about the effort. Although there were some early challenges in adapting the TRA process to EM's unique project portfolio, several staff expressed the belief that its application earlier in the design and engineering of the WTP could have prevented or alleviated some of the engineering and performance setbacks that occurred.

¹⁰⁷ TRLs were developed by the National Aeronautics and Space Administration and are widely used in DoD.

¹⁰⁸ GAO staff informally advised the Panel that it planned to recommend TRLs in their report.

¹⁰⁹ DEPARTMENT OF ENERGY, *Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Delays*, GAO-07-336, March 2007

¹¹⁰ The pilot has since expanded to the Richland Operations Office, also at the Hanford Site, and the Savannah River Site in Aiken, SC.

EM also began working with DoD to develop lessons learned that can be incorporated into EM's efforts to implement TRLs and the TRA process. Ultimately, it is hoped that EM will produce a version of the TRA process that can be incorporated within existing elements of the project management process per DOE Order 413.3A, such as Risk Management Plans and Project Execution Plans.¹¹¹

Anticipating and Budgeting for Project Risks

Managing project risk is one of the most challenging areas for the EM project portfolio. The factors cited above that contribute to the technical complexity of EM projects also produce substantial risk to project cost, schedule, and scope baselines. Moreover, because about 90 percent of EM project funds are dedicated to predetermined project baselines, there is a relatively small pool of funds to draw from when project risks materialize.

Order 413.3A specifies that all EM projects must have a Risk Management Plan that is reviewed and updated regularly. EM assesses project risks by determining both their likelihood and the cost/schedule impact should one occur. The results of this analysis are used to determine an overall confidence level that the project can be completed within given cost and schedule specifications. Based on that, EM determines how much contingency funding—funding dedicated to mitigating expected project risks—to request in congressional budget submissions.

For line-item construction projects, EM policy is to request enough funding to ensure at least an 80 percent confidence level. Operating and cleanup projects, however, are funded at only a 50 percent confidence level, with the difference between the amount of money needed to fund a project at a 50 percent versus an 80 percent confidence level labeled “unfunded contingency.” Should a project risk materialize that has a financial impact greater than the funding allotted at a 50 percent confidence level, EM generally responds either by moving funds from one project to another, within reprogramming limits, or by extending the schedule of that work into future fiscal years when additional funding can be requested.

The sheer magnitude of the cumulative costs associated with all of EM's current unfunded risks, in conjunction with the relatively low reprogramming thresholds that Congress has dictated for many EM projects, raised concerns among the Panel about EM's unfunded contingency policy. EM responded that a number of factors, such as the long lifespan of operating and cleanup projects, as well as the undesirability of carrying over project funds from year to year, necessitate this practice. EM managers also pointed out that, because operating and cleanup projects typically encompass a number of disparate elements (e.g., remediation, waste disposal, facility operations, etc.), they have operated under the assumption that cost overruns in one area could be offset by surpluses in another, with overall funding balancing out over the long term. While Academy staff were unable to find an example where unfunded contingency resulted in an inability to mitigate project risks, EM was likewise unable to cite any empirical data indicating

¹¹¹ Additional material regarding EM's pilot on the use of TRLs, including background on the TRL scale itself and GAO's findings on this topic, is available in Appendix C, Section V, “Managing Technical Complexity and Project Risk.”

that funding operating and cleanup projects at a 50 percent confidence level does, in fact, produce a balance between shortfalls and surpluses in the long term.¹¹²

Accordingly, in its August 2007 Observations Paper, the Panel proposed that EM undertake a study to determine whether, historically, the funds identified as “unfunded contingency” have been balanced between overruns and surpluses, as well as whether the practice has prompted an excessive need for project time extensions or reprogramming requests to Congress. The Panel proposed further that EM consider making the results of this study the foundation for a systematic reexamination of whether 50 percent is the appropriate confidence level to fund its operating and cleanup projects.

Several senior EM officials agreed with the notion that the 50 percent funding level should be reexamined, and staff on the House EWD Appropriations Subcommittee also expressed a desire to see the results of such an evaluation. In response, EM has agreed to initiate a three step effort that will:

1. complete by January 2008 an historical review of EM's use of unfunded contingency, with particular emphasis on reprogramming requirements, operating plan funding adjustments, or project schedule extensions
2. analyze the results of this review and identify alternative approaches by March 2008
3. evaluate current confidence levels for operating projects by June 2008

IMPLEMENTING SAFETY AND QUALITY ASSURANCE

Staff throughout the complex repeatedly emphasized that EM's top priority is to accomplish environmental remediation and risk reduction in a safe and high-quality manner. Accordingly, the implementation of and adherence to safety guidance and procedures are critical aspects of the EM Program.¹¹³

Oversight of Safety Performance and Procedures

Although some specific aspects of EM's safety regime, which encompasses both nuclear and industrial safety, are regulated by the Code of Federal Regulations (CFR) and overseen by the Defense Nuclear Facilities Safety Board (DNFSB),¹¹⁴ it is governed primarily by DOE directives (policies, orders, manuals, standards, guides, and handbooks). Several Department-level offices play a role in safety, such as the DOE Central Technical Authority (CTA) for Energy and

¹¹² More detailed information on how EM categorizes project risks, as well as its practices surrounding the allocation of unfunded contingency, can be found in Appendix C, Section V, “Managing Technical Complexity and Project Risk.”

¹¹³ A more detailed summary of the policy and guidance for EM's safety and quality assurance programs can be found in Appendix C, Section VI, “Policies and Guidance for EM's Safety and Quality Assurance Programs.”

¹¹⁴ The DNFSB, established in 1988, is an agency charged with oversight of the nuclear weapons complex administered by the U.S. Department of Energy, focusing primarily on issues of nuclear safety, security, and engineering.

Environment,¹¹⁵ which provides technical support for EM safety operations, and the Office of Health, Safety, and Security (HSS), which provides policy direction as well as some independent oversight. A key document providing coordination between HSS and DOE's various program offices, including EM, is the DOE Integrated Safety Management System (ISMS). ISMS is delineated in DOE Policy 450.4, *Safety Management System Policy*,¹¹⁶ as well as DOE Manual 450.4-1, *Integrated Safety Management System Manual*.¹¹⁷ The objective of ISMS is to ensure that federal and contractor staff systematically integrate safety considerations into management and work practices at all levels. The overall management of safety functions and activities is seen as an integral part of mission accomplishment. ISMS is applicable to all facility life-cycle phases, including design, construction, operation, decontamination, and decommissioning.

Within EM headquarters, the Office of Safety Management and Operations is the focal point for all safety-related issues, and includes sub-offices dedicated to Safety Management, Operations Oversight, and Transportation. EM plans to add a fourth office, Quality and Standards Assurance, in the coming months.¹¹⁸ The DAS for Safety Management and Operations is responsible for developing and interpreting DOE and EM safety policy and standards; ensuring their proper and timely implementation; and overseeing the continuous improvement of EM's safety performance. The DAS also serves as the designated champion for ISMS implementation within EM headquarters and in this capacity, leads EM's site-based ISMS champions across the complex.¹¹⁹

At the site level, organizational structures for safety-related functions differ across the complex, although nearly all include some combination of safety authorization basis¹²⁰ specialists, facility representatives,¹²¹ and engineering and/or environmental subject matter experts. At nearly all sites visited by Academy staff, a single official or office was designated as the focal point for safety-related issues, and that official often had a direct line of access to site management. In addition, site managers, FPDs, and other staff have some responsibility for safety issues.

Overall, Academy staff found that safety is deeply ingrained in the culture of EM's federal workforce. According to senior DOE officials, EM's overall safety regime, in terms of both nuclear and industrial safety, is among the most advanced and proficient within DOE. However, both HSS and the DNFSB have raised concerns that the quality of authorization bases and safety

¹¹⁵ In March 2006, DOE Secretary Bodman designated the three Under Secretaries (for Energy and Environment, Science, and Nuclear Security) as DOE CTAs. The Under Secretaries for Energy and Environment and Science are served in their capacities as CTAs by the Chief of Nuclear Safety. The Under Secretary for Nuclear Security, who also is the Administrator for NNSA, is served in this capacity by an analogous but distinct organization, the Chief of Defense Nuclear Safety.

¹¹⁶ Full text: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/450/p4504.html>>

¹¹⁷ Full text: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/450/m4504-1.html>>

¹¹⁸ For more detail, see the following section, "Implementing Quality Assurance."

¹¹⁹ In general, a site manager, deputy site manager, or other high-ranking safety official serves as a site's ISMS champion.

¹²⁰ An authorization basis, required for certain categories of nuclear facility, is a report documenting aspects of facility design and operational requirements relied upon by DOE to authorize operation of that facility.

¹²¹ Facility representatives are responsible for monitoring the safety performance of facilities and their operations, and are the primary points of contact with the contractor for operational safety oversight. They are responsible to line management.

oversight procedures are not uniform throughout the EM complex, particularly given the decaying condition of many EM facilities due to age and wear over time. Academy staff heard similar concerns expressed about the quality of sites' procedures for managing corrective actions that result from external and internal reviews and audits. Academy staff also noted some variations in contractors' safety performance and procedures, which were due at least in part to a lack of safety requirements in requests for proposals and contracts issued by EM. Together with HSS and the CTA for Energy and Environment, EM is taking an active role to create a set of standardized contract clauses relating to safety performance for inclusion in EM contracts.

Field staff interviewed throughout the complex did not believe that strict uniformity of safety oversight procedures is needed given the diverse nature of the facilities at EM's sites. However, the Panel observed that relatively low levels of federal staff to perform safety oversight functions, an overall aging workforce, and poor bench strength in key areas of safety-related technical expertise all contribute to less robust implementation of safety guidance than might exist at a more generously-staffed agency. Although the Panel saw no clear actions that EM should take relating to safety, other than enhancing its federal staff capacity in this area, it believes that it is important that EM ensures that roles and responsibilities for safety remain clearly defined and that safety policy and oversight maintain their independence from actual operations.

Implementing Quality Assurance

Quality assurance (QA) is governed primarily by DOE Order 414.1C,¹²² which defines standards and rules for QA programs throughout the DOE complex. The Order also incorporates other guidance documents such as CFR rules and professional standards. While ultimate responsibility for QA lies with federal DOE staff, Order 414.1C does include a contractor requirements document, the contents of which are largely duplicative of the overall Order.

The Academy staff found that explicit QA considerations were given an overall low degree of emphasis by EM staff in the field. While Academy staff did not conduct an investigation of QA-related incidents at EM field sites, with the exception of the Richland Operations Office, field personnel rarely placed strong emphasis on an overall QA posture for the site. Many field staff portrayed QA as being concerned primarily with overseeing the contractor's QA program, even though several of the QA criteria in Order 414.1C apply to federal staff activities rather than the contractor. Even with this emphasis on the contractor, senior EM headquarters managers indicated that field sites have been unable to ensure that QA requirements flow steadily downwards to EM contractors and subcontractors.

From an organizational standpoint, Academy staff found that while QA at the site level often was discussed as being "everybody's responsibility," in practice, actual QA responsibility was diffuse and undefined, with no clear QA champion identified. This mirrors an assessment by several EM headquarters' managers that the level of cultural importance field sites place on QA was much less than that given to other aspects of project management, such as safety, cost, and schedule performance.

¹²² For full text and further information: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/414/o4141c.html>>

As in the safety arena, it appears that at least some of the shortcomings in the QA area are due to a lack of adequate staffing. CTA staff indicated that some EM projects have only a fraction of the QA staff that comparable projects would have in private industry. In addition, QA-related direction from headquarters also seems unclear in its expectations and definitions of an acceptable QA program, often not going much further than simply directing field staff to implement the requirements spelled out in QA-related guidance documents. There is little direction in terms of where QA responsibility should reside in a field organization. The Panel believes that these factors have resulted in QA implementation that is inconsistent and lacks rigor at the field level.

Although the Panel's impression of EM's safety regime was favorable, the Panel also is cognizant of the close linkage between safety and QA. Consequently, the Panel has some concerns about the potential impact of what appears to be a relatively low amount of management attention to QA, both in headquarters and the field. The Panel believes that some of this is attributed to the lack of a clear focal point for QA within EM headquarters. Primary QA responsibility currently lies with the DAS for Safety Management and Operations, but until recently, no organization within EM headquarters has had specific responsibilities for providing direction and oversight to EM's QA program.

As part of an overall restructuring of the COO's office,¹²³ EM established an Office of Quality and Standards Assurance (QSA) reporting to the DAS for Safety Management and Operations, which will be the focal point in headquarters for QA issues.¹²⁴ According to its mission and functions statement, the QSA office will "ensure that the necessary technical, safety, and quality requirements and standards are properly identified and adequately implemented for all line-item EM capital projects and major operating projects and facilities in a timely and technically defensible manner." With regard specifically to QA, the office will "provide leadership and management of a corporate QA evaluation program to oversee the field implementation of the specific QA and quality control processes" at major EM projects.¹²⁵ As of November 2007, two EM employees have been detailed to the office, two additional detail assignments to the office have been proposed, and position descriptions for additional FTE are being drafted. Field personnel interviewed by Academy staff widely expect that this new office will improve the implementation of QA within EM, particularly in terms of providing the field with a clear source of QA authority and responsibility in EM headquarters.

In March 2007, the DAS for Safety Management and Operations, through the COO, issued a memorandum announcing a complex-wide initiative to assess QA programs at EM field sites. Currently, it is focusing only on high-risk, line-item construction projects in the EM portfolio, though there is some indication that the assessments will ultimately expand to include EM's

¹²³ The restructuring of the COO's office is discussed in Chapter 2, Organization and Management, in the section, "Staff Capacity in the Office of the Chief Operations Officer."

¹²⁴ The QSA office also will be responsible for other actions to ensure proper process and policy implementation. For example, it will lead the procedural and decisionmaking aspects EM TRA evaluations. The office will work with the Office of Engineering and Technology, which will conduct the actual assessment and provide technical expertise.

¹²⁵ The mission and functions statement outlines 10 major areas of responsibility for the QSA office, which are included in Appendix C, Section VI, "Policies and Guidance for EM's Safety and Quality Assurance Programs."

operating projects. In its August 2007 Observations Paper, the Panel proposed that the DAS for Safety Management and Operations build upon EM's current assessment of QA at construction sites, and perform a general assessment of QA. This assessment should focus on: translating QA guidance into a functional QA regime at the site level in a way that accounts for existing staffing levels and organizational structure; assessing staffing requirements needed to perform QA functions at an optimal level; clearly identifying a well-qualified focal point for QA at EM field sites; and providing the QA focal point with direct lines of access to top managers at the site level.

EM leadership agreed with the Panel's assessment of its QA regime. However, it does not plan to address this specific proposal until its own QA assessment is completed. In addition to establishing the QSA office, EM identified several measures it plans to take to improve QA implementation throughout the complex, including adding additional QA resources at the sites; establishing clear guidelines for future QA assessments; exploring the designation of a "go-to contractor" for QA site reviews; establishing a more systematic way to share QA lessons learned; and producing QA guidance tailored more closely to EM projects. In addition, EM indicated that it already is working to establish a designated QA manager at each of EM's major field sites, pursuant to lessons learned from its current round of QA assessments. While few specific timetables for completing these actions have been developed, it is clear that EM has elected to reevaluate its overall approach to QA.

FEDERAL PROJECT DIRECTORS AND INTEGRATED PROJECT TEAMS

The Panel's study of project management included not only the methods and mechanisms used to accomplish and oversee project performance, but also the organization and training of the project-related federal staff who perform these critical functions. As noted earlier, as part of its efforts to "projectize" its portfolio, EM has taken steps to certify all EM FPDs at appropriate levels of expertise as defined by the DOE Project Management Career Development Program (PMCDP).¹²⁶

Training and Certifying Federal Project Directors

The DOE PMCDP establishes four levels of FPD certification, each with increasingly rigorous requirements in the areas of knowledge and skill requirements; training courses; experience or developmental assignments and activities; and behavioral factors. Each certification level ultimately determines the total project cost (TPC)¹²⁷ of projects an FPD may manage. Since the certification program was announced and made mandatory in April 2004, EM has worked to ensure that all of its active FPDs are certified consistent with the TPC of the projects they manage.

¹²⁶ More information on EM's efforts to train FPDs can be found in Appendix C, Section VII, "Training and Certifying Federal Project Directors."

¹²⁷ TPC is defined by DOE Guide 430.1-1, Chapter 6, as "all costs specific to a project incurred through startup of a facility, but prior to the operation of the facility."

In its August 2007 Observations Paper, the Panel expressed a concern about the FPD certification standards, noting that the training regime failed to distinguish between the skills and training necessary to manage relatively short-term capital construction projects versus EM's operating and cleanup projects, which are often more technically complex and have longer life-cycles. Accordingly, the Panel proposed that EM undertake a study of the appropriateness of the DOE FPD certification standards to the unique operating and cleanup projects that characterize its project portfolio and use the results as a basis to tailor a version of those standards specifically for EM FPDs. Senior EM officials indicated that EM will enhance PMCDP training to address the need for familiarity with hazardous and radiological operations for new EM PMCDP Level 1 candidates, and also will reexamine its overall FPD certification process. EM expects to complete this effort by February 2008. EM has no plans, however, to evaluate the suitability of the certification levels themselves.¹²⁸

Another issue related to the FPD certification process that was identified by many EM staff was that EM's career track promotes to management positions individuals with technical backgrounds who have not had adequate management training or experience.¹²⁹ The FPD certification program does not have a management/leadership focus. To address this shortcoming, Assistant Secretary Rispoli has encouraged FPDs to attend an EM Project Management Case Study Workshop, which is part of EM's Executive Leadership Program—a mandatory program for all EM senior executive level staff. The case studies, which correspond with the various requirements outlined in Order 413.3A and associated DOE manuals, are approached from a manager's perspective, and one goal of the program is to develop the management skills of the participants. Thus far, FPDs and other non-managerial personnel from the Richland Operations Office and ORP have participated in the training program. Participants' post-training evaluations from those sessions generally were positive. However, because the workshop is part of a senior executive training program, its value to FPDs has not yet been fully demonstrated.

The Panel recommends that EM pilot test a project management case study workshop aimed specifically at federal project directors (FPDs) and, if successful, include the workshop as mandatory training at some or all FPD certification levels. EM also should use lessons learned from FPDs at the Office of River Protection and the Richland Operations Office who have already attended the workshop to develop the pilot and help make this determination.

The Panel believes strongly that this training curriculum could benefit FPDs and that EM should take appropriate steps to determine whether to mandate it. Particularly in light of EM's plans to

¹²⁸ EM has indicated that, for the purposes of determining the certification level required for a project, only the cost of the near-term baseline is considered. This would tend to minimize the difference between EM projects and projects in other DOE programs in terms of the level of annual funding required.

¹²⁹ The Panel addresses this issue broadly in Chapter 5, Human Capital Management. In its August 2007 Observations Paper, the Panel proposed that EM institute leadership training as a means to provide current and future supervisors and managers with needed competencies.

increase its federal field staff based on the Best-in-Class initiative, it is critical that the FPDs who will oversee this staff have adequate managerial as well as technical training.

Implementing Integrated Project Teams

EM also has worked to establish for its projects integrated project teams (IPTs)—multi-disciplinary, matrixed organizations of project staff as prescribed by Order 413.3A—that bring together for each project the various disciplines that are important to the project’s success, including contracting officers, safety- and quality-oriented personnel, legal counsel, and subject matter experts in relevant technical areas. Discussions with field staff indicated that the IPT concept increasingly is seen as a pillar of EM’s project management procedures. However, the effectiveness of the IPT concept was limited by several factors, including overall low federal staffing, lack of available, clearly-identified subject matter expertise, and lack of standard operating procedures for IPT members.

Overall, the Panel believes that the IPT concept is a critical component of EM’s project management regime. However, its success will depend on the availability of adequate staff and needed expertise.

CHAPTER 5

HUMAN CAPITAL MANAGEMENT

In the last 6 years, EM's onboard workforce has decreased by about 46 percent. This significant downsizing of the organization was the result of prior management policies based on the stated goal that EM was to "go out of business" as quickly as possible, and that with the appropriate contract and contractor, federal oversight should require fewer federal personnel. Living on the brink of reductions-in-force and a DOE A-76 outsourcing study that included EM's scientific and engineering workforce, many employees, especially younger ones with less career tenure, exercised personal self-management and departed EM for more secure employment. The net result was a significant loss of skills and talent within EM's federal workforce.

With the arrival of Assistant Secretary Rispoli, EM experienced a dramatic shift in its future vision. A reassessment of EM's project baselines showed that several sites have projects that will continue for many years into the future, and the goal of "going out of business" was replaced by a long-term future for EM that includes new mission responsibilities. With this change in the organization's end game, EM's management philosophy and human capital climate began to change. While EM continued to accelerate the closure of sites, the Assistant Secretary initiated changes that stabilized and increased the role of the federal workforce in contractor oversight and depended increasingly on the staff's capacity to perform as project managers, acquisition professionals, and safety professionals, as well as on a wide range of financial and managerial expertise. Although these changes reduced the staff's anxieties about their future and slowed the exodus from the organization, there has yet to be a reassessment within DOE of the staffing levels needed for EM to execute its newly defined, long-term mission. This chapter provides benchmarking data that indicate that EM's field operations are understaffed. It also discusses problems EM is experiencing in its efforts to fill existing vacancies.

Throughout this study, EM employees and managers discussed the issues surrounding EM's staffing levels and raised a variety of other human capital/human resources (HC/HR) concerns, which the Academy Panel and staff discussed extensively with EM and DOE headquarters HR staffs. In its three Observations Papers, the Panel presented several proposals regarding EM's HR service delivery; HC management and challenges; and workforce environment.¹³⁰ The ongoing interactions and continuing discussions between the Panel, EM leadership, and Academy staff have resulted in EM taking action on most of the Panel's proposals.

This chapter summarizes and updates the major observations, conclusions, and proposals presented in the Panel's three Observations Papers, reports on the actions EM has taken to respond to the Panel proposals, and offers final Panel recommendations for immediate action to address EM's significant human capital challenges.

¹³⁰ A complete list of all prior Panel proposals to improve the EM HC/HR function can be found in Attachment 1 to this report.

EM'S WORKFORCE PROFILE

According to August 2007 data,¹³¹ the EM workforce was 1,370—276 employees in headquarters and 1,094 in the field. As noted above, this on-board strength represents a 45.2 percent decrease from EM's FY 2001 workforce of 2,500. The 1,094 federal field staff manage the contractual output of a contractor workforce estimated at 34,000.¹³² Determining a federal workforce with the appropriate skills to carry out all of the acquisition and project management responsibilities to acquire and oversee this contractor workforce, which are detailed in chapters three and four of this report, is one of the major challenges facing EM. Creating strategies and plans to develop and retain its workforce and to identify and address all HC issues facing the organization presents other challenges.

HUMAN CAPITAL MANAGEMENT PLANNING

In November 2005, HR specialists from EM headquarters and field sites prepared a Human Capital Management Plan (HCMP) that included a comprehensive assessment of EM's vulnerability to workforce retirement and analyzed EM's key competency areas, e.g., acquisition, project management, technical, and other disciplines. It also outlined a variety of HC strategies to acquire and develop needed competencies within the future workforce, including leadership development, management development, succession planning, and workforce replenishment.¹³³ Interviews revealed that EM line managers had only limited involvement in the development of HC strategies.

HC Challenges

Throughout this study, EM's leadership, senior management officials, and staff made numerous positive statements about the EM workforce and Assistant Secretary Rispoli's actions to build an organizational culture that values the workforce. However, they also voiced several significant HC-related concerns. These concerns, summarized below, collectively communicated a relatively high level of anxiety relative to EM's short- and long-term ability to fulfill mission requirements.

1. When assigning staff to the new headquarters offices, the 2006 reorganization gave high priority to employee preference rather than organizational requirements, which reduced the competency level in some offices.
2. The past "culture of demise" that accompanied the organization's mission for closing sites had negatively affected the workforce pipeline and EM's ability to recruit new talent.
3. In the engineering and general physical science disciplines, EM's 2 largest occupations, approximately 40 percent of the employees will be eligible to retire within 5 years.

¹³¹ The data in this section were taken from EM's October 2007 Draft Human Capital Management Plan.

¹³² Staff level details and staff/contractor ratios are included in Appendix D, Section I, "EM Workforce Profile."

¹³³ In July 2006, EM refined the HCMP.

4. Hiring controls, which required the Principal Deputy Assistant Secretary's (PDAS) approval for all hires, even those likely to be filled through internal promotions, had been in place for some time and significantly delayed the hiring process.¹³⁴
5. As discussed below, EM headquarters managers had long-standing concerns regarding the quality of HR services provided by DOE headquarters.
6. Several individuals interviewed believed that because, historically, employees were placed into positions for which they lacked competence, poor performance materialized and has been tolerated. They also believed that reversing this performance pattern will be time-consuming and difficult, that management will not address the issue, and, therefore, that the problem will continue.
7. In order to meet Assistant Secretary Rispoli's expectations that EM assume greater responsibility for contractor oversight through effective project management techniques and enhanced procurement operations, additional staff and competencies are required immediately. These hiring requirements necessitate innovative and immediate HC solutions.
8. EM needs to build on the strengths and improve on the weaknesses identified in the 2006 Federal Human Capital Survey of employees.¹³⁵

The Panel commended EM's development of its HCMP, but suggested that field and headquarters line personnel needed greater input and buy-in on the strategies to be employed to meet EM's HC challenges. To accomplish this, and to ensure that EM has an effective process in the future for involving line personnel, **the Panel proposed in its September 2006 Observations Paper that EM establish a Human Capital Steering Committee (HCSC), comprised of headquarters and field managers and financial and HC/HR advisors, responsible for corporate agreement and oversight of critical HC initiatives and for ensuring that these initiatives are communicated throughout the complex.** EM adopted this proposal, and the EM HCSC has met quarterly to address a variety of HC issues. The Assistant Secretary also recently assigned the PDAS responsibility for providing strategic guidance and oversight to the development and implementation of EM's HC strategy. The Panel is pleased that EM has accepted this proposal and encourages the EM HC Steering Committee to meet, with PDAS participation, at least quarterly to monitor and provide advice on all HC initiatives.

EM'S HUMAN CAPITAL/HUMAN RESOURCES SERVICE DELIVERY CONFIGURATION

Providing HR services to EM's workforce is the responsibility of several different offices. The May 2006 reorganization elevated the significance and organizational placement of EM's HC/HR activities by establishing a DAS for Human Capital and Business Services. In the

¹³⁴ The EM hiring controls were lifted by the PDAS in October 2006, pursuant to an Academy Panel proposal.

¹³⁵ EM survey results are discussed in the "Workforce Environment and Diversity" section of this chapter.

original design for this office,¹³⁶ a Human Capital Planning office reported to the DAS, and its functions included the analysis of workforce readiness needs and the corresponding development of HC strategies and programs. Also reporting to the DAS was a Headquarters Personnel and Information Technology office, which included the IT function and preliminary HR transactional support, such as proposing position classifications and developing job analyses. The office also served as the day-to-day liaison between EM and the DOE Office of Headquarters and Executive Services (Headquarters HR), which actually performs for EM headquarters all HR servicing activities, e.g., staffing, position classification, labor/employee relations, benefits, and personnel action processing. The Department has not delegated to EM the authority to execute these actions.

At EM-owned sites, EM HR staff provide day-to-day HR support. EM's two largest sites, the Richland Operations Office and Savannah River, have HC/HR offices that are responsible for providing strategic advice and operational HR services to their workforces. The Richland Operations Office also services the Office of River Protection. The EMCBC HR office provides support to itself and to EM's field sites that are not large enough to have their own onsite HR office.¹³⁷ The Department has delegated to these EM field HC/HR operations full authority to perform HR servicing. At non EM-owned sites, HR services for EM staff are provided through cross-service support agreements with the DOE landlord organizations where the EM sites are located. For example, at Idaho and Oak Ridge, EM staff receive HR support services from the host organizations, Nuclear Energy and the Office of Science, respectively.

In its September 2006 Observations Paper, the Panel noted that EM HR servicing ratios for both direct and cross-serviced support (with the exception of the headquarters DOE and Oak Ridge HR offices) are generous by comparison to ratios in many federal agencies where service delivery strategies have been reengineered and efficiencies have been gained, particularly through the automation of classification and staffing functions.¹³⁸ While DOE and EM have implemented similar HR automation, the ratios do not suggest that savings in HR staffing were an agency-wide outcome of the automation investment.

HUMAN RESOURCES SERVICING CONCERNS

Field Satisfaction with Operational HR Servicing

Field interviews with both management and non-supervisory staff found a fairly consistent mix of positive, negative, and neutral comments regarding HR servicing. DOE does not impose specific service level standards on its HR offices or require servicing metrics beyond what the Office of Personnel Management (OPM) requires, nor has EM developed specific standards or

¹³⁶ At the August 2006 Panel meeting, EM leadership announced plans to reorganize this office, which is discussed in the "Human Capital/Human Resources Competence" section of this chapter.

¹³⁷ The smaller sites generally have a staff member who is the liaison between the site and the EMCBC.

¹³⁸ See Appendix D, Section II, "EM's Human Capital/Human Resources Delivery Configuration" for more information on HR servicing ratios.

service metrics to steer productivity of its HR operations, which could be particularly useful as EM strives to meet its workforce replenishment objectives.

Although field comments regarding the quality of HR servicing were reasonably balanced throughout the complex, field interviews highlighted concern with the EMCBC's servicing of some geographically remote, small-site clients. In those instances, management representatives indicated that while the EMCBC was doing well in providing recruitment services, they needed more HR assistance with their day-to-day supervisory issues, such as preparing position descriptions and taking performance-based actions. In one fairly small-sized location, management was even considering hiring a full-time HR staff member just so the site would be able to better handle those issues.

EM-Funded Employees at NNSA Sites

Interviews with EM managers at NNSA sites revealed some unique concerns with HR servicing for EM staff at those locations (3 EM staff at Los Alamos and 24 at the Nevada Site Office). Comments from interviewees suggested that HR servicing often was complicated by the continuing need to explain EM-specific issues to the NNSA HR service providers whose mission familiarity is understandably aligned with NNSA. Academy staff also found a disturbing, long-term issue concerning the administrative management of the EM workforce at NNSA sites. For several years, EM employees at NNSA sites were assigned to an obsolete organizational entity that had been disestablished when the NNSA Albuquerque Service Center was created. While the employees continued to be EM employees, NNSA supervisors provide their day-to-day oversight at various sites. Each year when appraisals came due, the question of, "Who should rate these employees—should it be EM or NNSA?" recurred, and employees complained that as a result their appraisals often were late. While DOE HR and the General Counsel's office made several efforts over time to resolve this situation, and both NNSA and EM participated in these efforts, a solution to the lingering issue was agreed upon only recently after the Panel discovered this long-standing issue.¹³⁹

While the Panel was pleased to see that a resolution to this long-standing issue is now being implemented, the Panel still has concerns that the HR/HC needs of the EM staff at NNSA sites are not sufficiently visible within EM, and that this small component of the EM workforce is not well supported by the current HR servicing arrangement. During the past year, the EMCBC assumed all HR servicing for the EM employees at two NNSA sites—Oakland and the Separations Process Research Unit.¹⁴⁰ Given this fact and that the EMCBC already services EM's other small sites, the Panel believed there was ample reason to think that the EMCBC could provide quality service to the EM employees at other NNSA sites as well. **The Panel proposed in its August 2007 Observations Paper that EM assess the feasibility of having the EMCBC provide HR servicing to EM staff at NNSA sites.** The Panel observed that incorporating this HR servicing into the EMCBC offered the potential of better integrating into the EM mainstream the HC/HR needs of the EM staff at NNSA sites. Since August, EM

¹³⁹ The agreement involves clarifying that NNSA supervisors will be responsible for day-to-day supervision of these EM employees and for preparing their annual performance appraisals.

¹⁴⁰ NNSA closed the Oakland Operations Office, which had been providing HR services to those EM staff.

consulted with NNSA to explore the feasibility of the proposal. To date no agreement has been reached. The Panel urges EM to work actively to reach an agreement with NNSA that would allow the EMCBC to provide HR services for the EM staff at all NNSA sites.

HR Servicing Concerns in EM Headquarters

The subject of HR servicing for EM headquarters has been a contentious one. From the outset of this study, EM headquarters managers expressed concerns about the HR servicing support provided by the DOE Headquarters HR office. These concerns came to a head when EM submitted to DOE headquarters the recruitment and processing actions needed to implement the 2006 reorganization. When the actions were not completed as timely as desired, EM sought additional HR authority to provide either fully or partially its own HR support. DOE headquarters denied the request. DOE policy is that the DOE Headquarters HR office will provide servicing for all DOE workforce located in headquarters.¹⁴¹

Interviews with DOE and EM officials reveal opposing viewpoints on the causes for the processing delays. EM believed it did the appropriate pre-planning and coordination needed to expedite processing. However, DOE headquarters indicated that EM's pre-planning analysis and documentation included technical flaws, which generated processing delays. It also indicated that prior communication and advance problem solving between the two organizations had been insufficient to avoid implementation glitches.

In its September 2006 Observations Paper, the Panel proposed that EM and DOE headquarters work together to develop and implement an HR strategy that addressed all of EM's current and anticipated personnel needs and HC initiatives. Initially, the Department's Chief and Deputy Chief Human Capital Officer and EM's PDAS and DAS for Human Capital and Business Services met weekly to track the progress of all EM personnel actions. For these meetings, EM's vacancies were listed in priority order, and for each vacancy, information was provided on each step in the process and actual completion dates. Although DOE does not have departmentally tailored HR servicing standards, EM developed a baseline for completing each action based on DOE headquarters' past performance timeframes.

In January 2007, however, Assistant Secretary Rispoli sought and received authority from the Deputy Secretary for the EMCBC to provide certain HR servicing (preliminary classification and recruitment processing) to EM headquarters. To effect this change, EM and DOE staffs worked to transfer business practice knowledge so that the EMCBC could assume these responsibilities. These efforts resulted in a draft agreement that recorded the agreed-upon processes. But the agreement did not clarify the long-term intent of this servicing arrangement. EM wants permanent authority for the EMCBC to provide full HR service to EM headquarters. DOE Headquarters HR initially had reservations about the permanency of the arrangement, but has become more comfortable with the proposal. In order to effectively plan and manage EM's HR workload and to avoid problems in the future, the Panel believed that DOE HR and EM must agree to a long-term solution that addresses the concerns of both parties. **In its August 2007**

¹⁴¹ There are two exceptions to this policy at present—the Offices of Science and Legacy Management. Further exceptions are not planned.

Observations Paper, the Panel proposed that DOE Headquarters HR and EM bring to closure as soon as possible all issues and questions related to long-term HR servicing for EM headquarters so future objectives and work requirements are clear to all parties and staff time does not continue to be consumed on this matter.

This matter remains unresolved. The Panel is concerned that this issue has been allowed to linger, particularly given the HR challenges discussed in this chapter that EM is facing, and believes that immediate, interim action is needed to help DOE Headquarters HR and EM reach a final resolution.

The Panel recommends that while DOE and EM continue to discuss this issue, a pilot demonstration be conducted that gives full delegated authority to the Environmental Management Consolidated Business Center to provide HR servicing to EM headquarters.

EM's Ability to Fill Staff Vacancies

The situation in EM headquarters is part of a larger problem with EM's ability to hire staff in a timely fashion. Data reveal that despite the field's general satisfaction with its HR servicing, EM's site offices struggle to fill their vacancies. During site visits, Academy staff found that every site had vacancies in several key positions, including supervisory, technical, and administrative positions. Perhaps the most glaring example of this was at the Office of River Protection, where 8 of the site office's 17 supervisory/managerial positions were filled with acting managers. There are several reasons why EM has had difficulty filling vacancies, not the least of which is that the nuclear energy industry went into a significant decline after the Cold War ended, and this country is in the process of rebuilding the expertise needed to address the complex technical problems associated with EM's work. In many technical areas, resources are scarce, and EM is not the only organization seeking this expertise. It is competing with numerous public and private entities as the nuclear industry once again expands.

The attrition level now facing EM, primarily due to retirements, compounds the problem of attracting new staff to the organization. Based on August 2007 data, approximately 22 percent of EM's workforce is eligible to retire immediately, and 40.3 percent is eligible to retire in 5 years. One senior EM official noted that for every two people hired, three people leave. With that as a pattern, the Panel is increasingly concerned about what appears to be a slow "employment erosion" within the organization.

Throughout this study, EM staff, particularly in the field, repeatedly expressed their concerns about the lack of bench strength in their offices. As of September 2007, EM's FTE ceiling was 1,495 and EM's onboard strength was approximately 1,380 employees. This staff vacancy rate is not significantly different than it was a year ago, despite EM leadership lifting the hiring restrictions on its site offices, noted above, and urging sites to fill their vacancies. At this rate, EM's employment level will underutilize the FY 2008 FTE ceiling by approximately 115 FTE.¹⁴²

¹⁴² With an estimated FTE cost of \$170,000, this represents \$19,550,000 of unused program direction funds.

The Panel is very concerned about EM's ability to fill its existing vacancies. EM's successful execution of its mission—to reduce the risk and clean up the environmental legacy of this country's nuclear weapons program—is of vital importance. The Panel was encouraged to learn that the EMCBC is working closely with the sites to identify critical positions that can be hired using centralized hiring practices. The following functional areas will comprise the first round of centralized hiring: construction management, project control, property management, cost estimation, and acquisition management. This will allow EM to selectively target recruiting resources and announce positions for multiple vacancies, a step intended to increase hiring success.

Recruitment Strategies

To help infuse the organization with new talent, EM implemented the EM Career Intern Program (EMCIP), which is designed to provide a continuing source of highly competent technical personnel. However, several field staff questioned the effectiveness of an intern program to address EM's immediate technical needs. They doubted whether someone right out of school had the expertise needed to oversee EM's complex contracts and ensure that work done by contractors complies with the terms and conditions of those contracts. They believed that potential employees needed some experience in designing, decontaminating, and decommissioning facilities before working for EM. Although they agreed that intern programs could have a viable place in the EM workforce replenishment solution, they suggested that EM's HC/HR offices needed to take a multifaceted recruitment approach.

The Panel believes that EMCIP is an excellent program to serve as a pipeline of talent for the future. However, EM lacks depth of experienced staff in its critical occupations. In addition to its intern program, EM needs to develop other proactive recruitment strategies to remedy skill deficiencies at the mid, senior, and executive levels of its workforce. Several organizations, including the Academy, have conducted research in the recruitment area from which EM might benefit.

The Partnership for Public Service, an organization that works to help the federal government become an employer of choice, has emphasized the need for mid-career hires within the federal sector. In its September 2004 report, *Mid-Career Hiring*, it acknowledges that all good organizations develop talent from within, but because the number of mid-career employees who will retire in the coming years will likely exceed the number of promotion-ready candidates who are already in the federal government, federal agencies must take steps to replenish its mid-career workforce. EM is facing this HC challenge because of prior efforts to reduce the size of the EM workforce and a lack of career development programs for the remaining workforce. Now that a longer-term EM mission has been defined, those factors contribute to EM's immediate need for experienced technical people who can join its workforce and perform the work that needs to be done. In addition, seasoned personnel will be an invaluable asset in providing worthwhile developmental experiences to EM interns.

The Partnership for Public Service also has helped several agencies revise and streamline their hiring processes. In the summer of 2004, it provided assistance to NNSA, which was recruiting a senior scientific position. NNSA's recruitment effort had lasted for months and yielded only

three applicants and no selection. The Partnership for Public Service consultants revised the vacancy announcement to make it more informative and the position more desirable. A marketing strategy was created that emphasized the importance of the agency's mission, why one should want to work at NNSA, and the competencies required to perform the work. They used the Internet and other job boards to conduct a proactive search for candidates. The effort produced 28 qualified applicants for the critical position.

The Academy also has cited a number of effective recruiting tactics¹⁴³ similar to those practiced by the Partnership for Public Service, such as:

- developing data and metrics on recruitment and hiring
- marketing the organization: "Create a vision; sell the image."
- using web-based recruitment tools
- mapping and streamlining the employment process
- developing and using candidate management and tracking systems
- encouraging on-site visits
- using the organization's best employees as recruiters
- using current flexibilities, such as recruitment bonus/relocation allowance
- emphasizing the attractive federal benefits package (health, life, thrift plan, and annual and sick leave), as well as agency work-life programs, such as alternate work schedules

With EM facing stiff competition for many of its technical positions, the Panel believes that EM will need to adopt creative hiring strategies such as those listed above and use all of the flexibilities available to it if it is to successfully staff up to its allocated FTE ceiling. Because the vacancy problem exists throughout the EM complex, the Panel believes that EM needs to take an organization-wide approach to this problem. The DOE Headquarters HR Office also needs to lend its support to this critical effort by helping to remove any roadblocks that might arise and serving as an advocate for EM's efforts. To the extent possible, the Panel also believes that the EMCBC should provide assistance to site offices that are experiencing difficulties with their recruiting and hiring efforts.

The Panel recommends that EM's Human Capital Planning office, working in concert with DOE Headquarters HR and the Human Capital Steering Committee, develop innovative recruitment strategies to attract and hire the junior-, mid-, senior-, and executive-level staff required to achieve EM's current and future mission objectives. The Panel further recommends that,

¹⁴³ National Academy of Public Administration, *The Quest for Talent: Recruitment Strategies for Federal Agencies*, 2001.

to the extent that resources permit, the EMCBC help sites with their recruiting and hiring efforts.

WORKLOAD FORECASTING AND STAFF ALLOCATION

The inability of EM to staff up to its FTE allocation is only one aspect of EM's staffing problem. As noted earlier in this report, the Academy Panel found that there appear to be significant shortcomings in the number of staff allocated for such critical functions as project control officers, safety and quality specialists, and contract administrators. The Best-in-Class Project and Contract Management initiative, discussed in the Project Management chapter, also supports the Panel's view that EM lacks adequate staff in several technical areas.

Interviews with EM managers revealed that workload forecasting and the allocation of positions against workload were generally based on opinion rather than on objective workload-based data. In the Senate Report on the FY 2007 National Defense Authorizations, the Committee on Defense Authorization advised EM that it was "un-persuaded that the Department has analyzed itself in terms of its ability to reassign, retain, or rebalance within its current 1500 employees; and that before EM seeks additional funds for consultants or federal staff, it must first demonstrate this type of analysis has occurred." The Panel noted that the absence of a workload measurement and planning system in EM presented HC vulnerabilities for the organization and failed to comply with the Committee's direction for objective-based analysis. Absent such a system, there was evidence that EM's hiring was overly driven by factors such as budget; A-76 studies; and political and EM leadership decisions. **In its January 2007 Observations Paper, the Panel proposed that EM develop a workload forecasting system for the complex so that workforce resource planning can be calibrated to its mission requirements.**

In response to the Panel's proposal, EM asked Academy staff to conduct benchmarking reviews on workload planning approaches from which EM might benefit. The review considered internal workforce/workload measurement approaches utilized by EM headquarters, the Richland Operations Office, the Federal Technical Capability Program, and the Facility Representative Program Requirements. Academy staff also examined the workload planning methodologies used by:

1. the Nuclear Regulatory Commission (NRC)
2. the Naval Facilities Engineering Command (NAVFAC)
3. the Army Corps of Engineers (COE)¹⁴⁴

¹⁴⁴ Academy staff selected federal methods to review given their applicability in substantiating staffing/budget needs at the agency, department, Office of Management and Budget, and congressional levels. Selected organizations advised the study team that their projection methods have been very helpful in this regard. Summaries of the NRC, NAVFAC and COE workload planning methodologies are included in Appendix D, Section III, "Workload Planning and Staff Allocation."

After examining the information received from the benchmarked agencies, Academy staff used the NAVFAC and COE workload forecasting methodologies to project what EM's staffing level would be using those systems. Because COE and NAVFAC projects generally have lower life-cycle costs (LCCs) than EM projects, Academy staff asked those organizations to estimate what their anticipated FTE requirements would be for a representative \$25 million environmental restoration project so that the results could then be extrapolated for comparison with EM's larger LCC projects. Both COE and NAVFAC provided the information requested. However, their planning officials cautioned that the real-life staffing results could differ drastically depending on the acquisition/project execution approaches used, as well as the specific project milestones associated with the actual project phase (e.g., study/design or remediation/construction). With that caveat, Table 8 summarizes the COE and NAVFAC factors for this notional project.

Table 8: COE/NAVFAC FTE Projections for Notional \$25 Million Project

Question	COE Response	NAVFAC Response
What percentage of the \$25 million would be dedicated to project staffing?	17.7%	10%
What number of FTE would this percentage purchase? ¹⁴⁵	44 FTE	23.5 FTE
Of the overall number of projected FTE, what number would be at organization levels above the project level?	12 FTE	3.25 FTE
Of the overall number of projected FTE, what number would be at the project level?	32 FTE	20.25 FTE
What percentage of the \$25 million would be used for staffing at the project level?	12.8%	8.1%

Next, Academy staff took the project-level staffing percentages that COE and NAVFAC provided—12.8 percent and 8.1 percent, respectively—and applied them against the LCCs of some current EM projects. This produced a total FTE requirement for the project life cycle, which was then divided by the cost per EM work year (i.e., \$170,000). That result was then spread over 20- and 30-year life cycles (which are typical of many EM projects) to approximate what EM staffing would be if the COE and NAVFAC workload forecasting factors were used. The results are shown in Table 9 on the following page. There are several cautions to this approach. The comparison assumes that EM staffing would be spread evenly over the life cycle of the project. This assumption clearly does not reflect actual EM staffing practices, but it is useful for purposes of comparison. In addition, EM does not project future staffing costs at the same time as it projects future contract costs.

¹⁴⁵ COE and NAVFAC apply labor costs at \$100,000 per FTE.

**Table 9: EM Staffing Using COE/NAVFAC \$25 Million Project Scenario
for Selected EM Sites**

EM Site*	Project LCC (rounded to nearest tenth of billion)	Annual FTE** using COE Staffing Factor (12.8%) with 20-Year LC	Annual FTE** using COE Staffing Factor (12.8%) with 30-Year LC	Annual FTE** Using NAVFAC Staffing Factor (8.1%) with 20-Year LC	Annual FTE** Using NAVFAC Staffing Factor (8.1%) with 30-Year LC	EM FY 2008 FTE***
SR	\$33.9	1276	851	808	538	339
RL	\$23.7	866	595	565	376	245
ORP	\$56.4	2,123	1,416	1,344	896	112
CBFO	\$5.2	196	131	124	83	50
PPPO	\$14.4	542	361	343	229	45
ID	\$7.8	294	196	186	124	67
OR	\$6.0	226	151	143	95	83
LASO	\$1.5	56	38	36	24	6****
NSO	\$2.2	83	55	52	35	30****
LLNL	\$12	5	3	3	2	7****
Staffing Totals (based on COE/NAVFAC staffing factors)	n/a	5,667	3,797	3,604	2,402	984
EM Staffing as % of Staffing Totals	n/a	17.4%	25.9%	27.3%	40.9%	n/a

Source: LCC figures from March 2007 EM Quarterly Project Review.

*LASO is the Los Alamos Site Office; NSO is the Nevada Site Office; and LLNL is the Lawrence Livermore National Laboratory.

**FTE cost of approximately \$170K per man-year provided by EM.

***FY 2008 FTE ceilings provided by EM.

**** Assumes matrixing of Albuquerque Service Center staff to augment site staff.

As shown in Table 9, applying the COE and NAVFAC workload forecasting factors produced staffing levels anywhere from two to six times the amount of staff EM actually had on the ground, depending on which assumptions were used, and significantly more FTE requirements than are currently provided in the FY 2008 budget.¹⁴⁶ Even though there are substantial differences between EM and NAVFAC/COE in terms of organizational structure, nature of projects, and approaches to contracting and project management, the differences in staffing levels cannot be totally discounted. The data also support Panel observations made during the course of this study that several occupations appeared to be understaffed, including project control officers and cost-price analysts. There also were indications of possible understaffing in several other areas, including quality assurance oversight, acquisition, and contract administration. The data presented, together with criticism from the Government Accountability Office, the DOE Inspector General, and congressional sources, indicate that this is an area that

¹⁴⁶ Additional information on the composition and distribution of the EM workforce at the time of the benchmark review and the COE and NAVFAC workload planning methodologies are found in Appendix D, Section III, "Workload Planning and Staff Allocation."

calls for examination. A number of areas would have to be researched, however, before it would be possible to make a more direct comparison of EM staffing with that of COE and NAVFAC, such as:

- which functions COE and NAVFAC have retained internally that EM performs using contractors
- which functions are performed for COE/NAVFAC and EM by others (e.g., landlord sites) on either a cost-free or reimbursable basis
- the degree to which staffing is influenced by EM's contracting approaches
- the degree to which the workforce grade/cost structure (i.e., estimated at \$170,000/work year in EM and \$100,000/work year in COE/NAVFAC) influences productivity
- the degree to which EM is satisfied that its current project management approaches are enabling it to optimally meet mission requirements
- the degree to which EM productivity may be a byproduct of workforce underutilization versus actual understaffing
- a range of other pertinent workload forecasting factors

The Panel appreciates the efforts EM is making to address the Panel's proposals regarding workload forecasting, such as seeking best practices from its internal methodologies, requesting the benchmarking review, and hiring a contractor to assist in developing a workforce forecasting methodology. The Panel believes that a sound workload/workforce forecasting methodology will serve as a foundation for EM's future HC initiatives. However, a critical first step in workload planning is identifying the various functions an organization performs. The next step would be grouping similar or like functions that are performed in more than one organizational unit. The degree to which EM can standardize its functions is not known at this time. However, organization and position design analyses, which assess attributes such as occupational distribution, pay plan utilization, and supervisory ratios, can help pinpoint opportunities for standardization or identify poor organizational and/or position design.

In its August 2007 Observations Paper, the Panel proposed that EM establish a rigorous staff requirements methodology and include an organization-wide analysis of its occupational distribution, pay plan utilization, and supervisory ratios as part of its overall workload planning initiative. The Panel also noted that COE's and NAVFAC's staff forecasting practices, which develop staffing projections for the life of a project at the same time as a project's total contract costs are being developed, improves overall project management by providing visibility for long-term staffing requirements at the same time as long-term project costs are considered. These forecasting practices have helped COE and NAVFAC gain departmental, Office of Management and Budget, and congressional support of staffing/budget requirements early in a project's development, and has facilitated HC planning activities by providing additional clarity and time for such initiatives. **In its August 2007 Observations Paper, the Panel proposed that EM develop long-term staff estimates for its projects and that they be integrated with long-term project costs.** EM has reported it will adopt this proposal as a "next step." EM plans to use the Human Capital Steering Committee to tie this

effort to project management procedures. When the Panel expressed some concern that workload forecasting needed to be examined from a project management as well as a human capital perspective, EM included the DAS for Acquisition and Project Management as a member of the EM HCSC.

The Panel is concerned about EM's staffing allocation and believes there are compelling reasons for EM to immediately hire above its current FTE allocation. The most compelling reason is the change that has occurred in the organization's mission. EM's prior leadership reduced EM's FTE ceiling with the understanding that EM was "going out of business" in the near future and that some of its functions would move to other organizations. Current EM leadership has articulated a different vision for EM's future. A reassessment of EM's project baselines indicate that several sites have projects that will continue for decades, and EM has been given a new long-term role that includes addressing the nuclear and chemical waste generated by today's nuclear activities. The reductions in EM's staff allocation from FY 2001 to the present do not adequately consider EM's new future vision.

The Panel believes that the EM mission is among the most critical within the federal government. EM is responsible for one of the largest, most diverse, and technically complex environmental cleanup programs in the world. Assistant Secretary Rispoli asked that the Academy examine EM's human capital management operations as part of this study, believing that many of the problems in EM's acquisition and project management activities, which are critical to EM's success, stemmed from human capital management issues. The Panel concurs, and, as discussed throughout this chapter, it has made several proposals to EM during the course of this study, such as eliminating centralized hiring controls, resolving Headquarters HR servicing problems, and developing a complex-wide HR servicing strategy including metrics, that were designed to increase EM's ability to have adequate staff available to oversee projects and perform its critical mission.

Although adopting the Panel's proposals will improve EM's human capital management operations, the Panel believes that EM's current staffing allocation presents a significant risk to the program's success. At the October 2007 Panel meeting, DOE senior leadership revealed that DOE was embarking on a Department-wide workforce analysis effort. However, the Panel believes that action is needed immediately to increase EM's employment levels to counter the staffing decreases EM has experienced in recent years. The Panel was particularly struck by the large disparity between EM's current FTE allocation and estimates of what the allocation would be using the COE/NAVFAC staffing methodology. Although the Academy staff analysis was a rough estimate, the increase in the number of EM staffing using the methodology (two to six times EM current staffing levels) strongly suggests that the EM FTE ceiling is too low. The Best-in-Class Project and Contract Management initiative discussed earlier substantiates this finding. The Panel is confident that the rigorous workload analysis it has recommended will validate an immediate increment of 200 employees and suggest the need for additional staffing as well.

The Panel recommends that while EM develops a workforce planning methodology for the future and DOE headquarters conducts its workforce analysis for the Department, EM be authorized to hire immediately an

additional 200 employees. Given the magnitude of EM's current staffing shortfall and the urgency of its hiring predicament, the Panel also recommends that EM propose to DOE headquarters that the EMCBC conduct this recruitment.

HUMAN CAPITAL/HUMAN RESOURCES COMPETENCE

The process EM used to assign staff to the new headquarters offices that resulted from the 2006 reorganization was highly participative. Staff were asked to identify, in order of preference, their top three choices for where they wanted to work. EM senior management reviewed the employees' requests and assigned staff to their new positions after ensuring that each person met the job requirements. Many interviewees noted that this process gave too much emphasis to employee preferences rather than the competencies to perform the work, which resulted in some mismatches between staff assignments and required competencies. This was especially true in the HC Planning and Headquarters HR and IT offices where, despite the generous numbers of staff in those offices, they lacked sufficient technical competence in the HC/HR field to address the significant HC/HR challenges facing the organization. Prior to the reorganization, the HC Planning office had two staff members with HC/HR expertise who were reassigned out of the office, and other staff with technical backgrounds who did not possess HC/HR competencies, were assigned to the office. Reported reasons for these reassessments were that EM leadership was attempting to fulfill employee preferences and that it was positioning technical staff as a means to minimize any undesired impact of the A-76 competitive sourcing action, which has since been cancelled. Regardless of the reasons, the net effect on staff HC/HR competency remained the same.¹⁴⁷ DOE and EM officials have been concerned about the limited HC/HR staff expertise in EM's HC Planning and Headquarters Personnel offices, and that this capacity shortage negatively impacted EM's ability to execute its HC/HR responsibilities.

In its September 2006 Observations Paper, the Panel expressed concerns with the shortage of HR/HC expertise it found in EM headquarters, particularly in the HC Planning office, and with EM's practice of staffing that office with technical staff and retraining them in HR/HC competencies as opposed to hiring HC professionals. Many of the HC planning requirements EM is confronted with require solutions in the very near term. While technical staff can offer valuable perspectives on many of these issues, any useful retraining of technical staff in needed HR/HC competencies is not a short-term proposition. In addition, this practice appeared to conflict with the concern expressed by many supervisors and managers regarding the limited bench strength of EM's technical staff.¹⁴⁸ The Panel believed that more appropriate alternative

¹⁴⁷ The composition and staffing of the Headquarters HR and HC Planning offices after the 2006 reorganization (as was described during staff interviews) are illustrated in Appendix D, Section IV, "Human Capital Competence."

¹⁴⁸ Throughout this study, Academy staff asked supervisors and staff about staff competency, training, and bench strength. For the January 2007 Observations Paper, Academy staff calculated the responses to these questions using a scale of one to five, with five being the highest rating. The most notable finding was the consistently low response from supervisors about their staff's bench-strength capacity—a 2.5 or lower across occupational areas. The questions and findings are in Appendix D, Section V, "EM Competency Assessment." Respondents included staff from Savannah River, the Carlsbad Field Office, and headquarters staff located in both the Forrestal and Cloverleaf

approaches to acquiring HC competency would be to obtain contract support or tap EM's own HC proficiency within the field to develop needed HC solutions. In its January 2007 Observations Paper, the Panel observed that EM did not have a specific strategy that outlines the optimal role of field site HR offices, the EMCBC, and/or contract staff for meeting EM's regular and surge HR workload.

In March 2007, EM hired an SES-level HR professional to head the HC Planning office. And as discussed in the Organization and Management chapter, EM also merged this office and the HR functions of the Headquarters Personnel and IT office into one organization under the supervision of this new executive. The new director has converted vacant positions that were held by technical staff into management analysts/HC positions and is seeking candidates with HR experience.

The Panel supports EM's plan to merge its HC Planning and Headquarters Personnel offices under the supervision of an HC director. Now that all of EM headquarters HC/HR functions are being restructured under new leadership and the office is acquiring additional staff with HR/HC competency, the Panel believes that it is an appropriate time for EM to develop a comprehensive HR service delivery vision for the organization. **In the August 2007 Observations Paper, the Panel proposed that EM finalize a strategic vision for EM human resources service delivery that establishes EM-wide HR servicing metrics and measures of efficiency, and identifies how the EM site HR offices, the EMCBC HR office, and contract HR service providers should be optimally used to meet regular and surge HR workload.** EM has begun such an effort.

Although the Panel was pleased to learn of EM's plans to add several additional HR-oriented positions to this new office, it was concerned that the positions would be classified as GS-343, Management Analysts (HR) in keeping with DOE HR practice, and not as GS-201, Personnel Management Specialists. Although EM does not have delegated hiring authority in headquarters requiring "operational" HR staff, its Human Capital Planning office is responsible for performing "staff level" strategic HC planning for the EM workforce. That staff will need HC expertise given the HC/HR-oriented program development and evaluation activities these positions will be expected to perform. The Panel observed that a GS-343 series designation may adversely impact EM's ability to attract and retain applicants with the required HC/HR competency. **The Panel proposed in its August 2007 Observations Paper that EM develop a proposal for DOE headquarters' consideration that provides a basis for allowing EM to hire staff in the GS 201, Personnel Management series.** EM agreed that new vacancies should be filled with candidates with a substantial HC/HR background, but did not agree that the positions should be classified GS-201s. The DAS for Human Capital and Business Services and the HC Planning office director argued persuasively that while the positions require incumbents with HR experience, they also must possess broader capabilities in the area of management analysis and program evaluation. Because these senior managers will be providing the vision and direction for these new positions, the Panel deferred to their decision.

locations. Academy staff continued to ask these questions during the remaining site visits. Although not officially tabulated, the responses at those sites were consistent with the earlier sites visited.

An unintended consequence of the Panel's proposal to increase HC competence has been that some EM managers interpreted the Panel's proposal to mean that the current employees have no knowledge/HR expertise, and that their advice should not be followed. The Academy staff did not meet with the incumbent staff to assess their HR knowledge, but reviewed their current position classification and backgrounds to determine that many of these employees might be better utilized in their technical fields. The new HC director is taking steps to increase the HC competence of the office, including assessing the competencies of current staff and ensuring that appropriate HC/HR assistance is being provided. The Panel commends EM on its plan to staff the HC Planning office and ensure that staff within that office have a substantial core of HR/HC competencies. The Panel urges EM to ensure that future candidates for HC/HR positions have operational HC/HR experience, and to maintain the internal organizational capacity to perform EM's HC/HR functions.

EMCBC CLOSURE CADRE

Although the EMCBC's primary function is to provide mission support services to EM field offices, it also provides programmatic support. When first established in 2004, the EMCBC's Office of Technical Services—called the closure cadre—was comprised of EM employees who worked at EM sites that had closed or downsized in preparation for closing. The original purpose of the cadre was to retain within EM a pool of highly experienced individuals in closure operations who could be assigned to sites that were losing expertise as the work drew to a close. Cadre staff also could be called upon to assist non-closure sites with specific projects. The concept was considered to be a win-win situation for all concerned. Employees at closure sites who were facing the potential loss of their jobs were able to continue their employment with EM, and EM was able to retain highly experienced individuals whose talents were needed elsewhere throughout the complex.¹⁴⁹

In recent months, EM has hired into the cadre additional staff from outside of EM. In its **September 2006 Observations Paper**, the Panel suggested that EM convene an internal advisory group of managers, project directors, and financial and HC/HR professionals to identify the role and future vision for the cadre and make recommendations on its appropriate size, skills mix, and operating procedures. EM adopted the Panel's proposal by forming a group under the HCSC, which provided recommendations to the COO regarding the future role of the EMCBC, including the cadre. The group identified a long-term need for the EMCBC to provide technical support to the field, and identified the disciplines that should be found in the cadre, such as project directors, facility representatives, safety specialists, industrial hygienists, health physicists, accountants, attorneys, and cost estimators. The group also suggested using a technical support services contract to provide short-term technical support. The COO concurred with the group's recommendations. In January 2007, the EMCBC's Office of Technical Services developed the Cadre Program Plan, which provided more specific details regarding roles, composition, and operating procedures for the cadre.

¹⁴⁹ The composition of the cadre as of October 15, 2007 is shown in Appendix D, Section VI, "EMCBC Closure Cadre."

As a condition of employment, cadre staff serve under personal mobility agreements, indicating their willingness to move to any EM location needing their unique skills. Failure to accept relocation is a basis for terminating their employment. The cadre's manager makes assignments—both short and long term—by calling cadre members and personally trying to persuade them to accept an assignment. Some cadre members were able to remain at the sites where they were physically located when they joined the cadre (i.e., Rocky Flats, Mound, or Ohio); but eventually closure progress will require their reassignment elsewhere. Other cadre members have had to relocate one or more times. Interviews revealed that it is more likely that cadre members will find employment outside of EM or retire before they accept a mandatory move.

EM leadership has stated that cadre members are valuable employees with critical skills required to assist in the “closing sites” mission of EM and with other specific projects at non-closure sites. The Panel agrees that the cadre can serve an important role as additional EM sites move toward closure. But its usefulness will be marginalized unless these resources are managed effectively. The Panel believes that regardless of the fact that employees signed mobility agreements, EM management needs to address the additional hardships that a cadre lifestyle creates. For example, some cadre members accepted assignments but did not relocate their families. Although a personal decision, the reality is that cadre membership can present economic and personal downsides. According to EM leadership, the organization recognizes the financial and emotional hardship that these decisions may cause and, through the Federal Occupational Health Employee Assistance Program, EM provides free services of professional and licensed staffs who can help families work through the issues that separations can create. EM officials also indicated that home buyout/relocation/retention bonuses and performance awards are strategically used to recruit and retain cadre members. Some cadre members commented that in some instances, these incentives might be persuasive in influencing them to accept alternative assignments.

Despite the programs in place to assist cadre members, some cadre members indicated that cadre members are not treated equitably. According to those individuals, some cadre members were required to move while others were not; some received training opportunities while others did not; and some received retention allowances while others did not. One individual said, “The majority of the people I know in the cadre will cease to be part of the cadre as soon as they can.” Recently, EM announced that a new COO will assume that position. Academy staff were informed that the COO designee is committed to conducting a comprehensive review of the EMCBC, including the size and skill mix of the cadre. The Panel suggests that the COO’s review of the EMCBC also attempt to identify and address the reasons for some cadre members’ perception of inequitable treatment.

SENIOR EXECUTIVE SERVICE PERFORMANCE RECOGNITION

Interviews conducted during site visits revealed that field staff perceive that headquarters executives’ performance and accomplishments receive more favorable cash recognition than do their peers in the field. Academy staff also learned that the COO does not rate the two senior EM executives who work at facilities where EM is not the landlord—Oak Ridge, which is an

Office of Science site, and the Idaho Operations Office, which is a Nuclear Energy site. Rather, the heads of the Oak Ridge and Idaho offices rate them with EM input, as requested. Further, the EM site managers at Oak Ridge and Idaho are in the SES performance recognition pools of Science and Nuclear Energy, respectively, and not EM's pool.

Academy staff interviewed the DOE staff associated with the SES performance process and reviewed EM's SES performance recognition data.¹⁵⁰ EM's performance and cash award distribution practices for SES executives have varied in recent years. Examination of the various forms of recognition given for the FY 2004 to FY 2006 performance cycle confirmed that the field's perception that headquarters executives receive greater recognition than field executives might be correct. Although the percentage of SES executives receiving performance awards did not suggest an EM headquarters advantage, the dollar amount of EM headquarters performance awards, on average, exceeded all field awards each year. The Panel found the disparity between performance awards received by SES executives at non EM-owned sites versus executives in EM headquarters and EM-owned sites particularly troublesome. The value of performance awards differed by as much as \$6,000. The Panel also found that, in addition to performance awards, some SES executives also received individual and/or group cash awards during this timeframe. This practice suggests that these awards were being used to augment SES performance awards, which is not an appropriate application of cash award policies and procedures.

In its January 2007 Observations Paper, the Panel proposed that EM conduct an internal validation of its SES performance award and cash award practices to ensure the integrity of the actions taken. The Panel further proposed that EM assess whether the current practices for appraising and awarding executives at non-EM sites were equitable with respect to EM's practices, and coordinate changes with the Offices of Science and Nuclear Energy as appropriate. Finally, the Panel proposed that in future years, EM review its SES recognition practices to ensure that distributions do not inadvertently penalize recipients based on the location of their employment/reporting relationships.

In November 2006, EM established an SES award review group that reviewed all proposed distributions of awards by location for the FY 2006 performance cycle. The group reported that the issues identified in the Academy staff's review had been rectified. EM plans to use the same procedure for the FY 2007 performance cycle. The Panel urges that EM continue to be diligent in monitoring SES performance recognition to ensure equity between all EM SES members regardless of employment location.

WORKFORCE ENVIRONMENT AND DIVERSITY

In addition to the hundreds of interviews conducted throughout the complex, Academy staff also examined the results of OPM's 2006 Federal Human Capital Survey (FHCS) to gain insights into

¹⁵⁰ Details of the analysis are provided in Appendix D, Section VII, "SES Performance Recognition Issues." The Academy staff's analysis was not an audit of EM management decisions relative to executive appraisal and recognition. Rather, the purpose of the analysis was to identify systemic issues that merit EM consideration.

EM staff perceptions about their work environment.¹⁵¹ The review of EM FHCS results confirm many of the Academy staff's observations derived from the many interviews conducted during the course of this study. The survey revealed some strengths in the organization.

- Over 80 percent of EM employees believed their work is important and know how their work relates to EM's goals and priorities.
- Over 70 percent of EM employees believed their workforce has the knowledge and skills to get the work done. This response rate is consistent with the responses to questions Academy staff asked about staff competencies throughout this study.¹⁵²
- Almost 82 percent of EM employees know how their work relates to the agency's goals and priorities.

Survey responses also pinpointed areas of weakness within EM.

- Almost 75 percent of EM employees believed performance differences are not distinguished in a meaningful way.
- Over 80 percent of EM employees did not see a link between performance and pay raises or that management will take steps to address poor performance.
- Less than one-third of the EM staff expressed a feeling of empowerment.

Historical factors, such as reorganizations resulting from diverse management philosophies, A-76 efforts, and downsizing, may account for some of the negative responses on the FHCS. However, the Panel believes that there may be some leadership and management issues that also might contribute to EM staff perceptions. The 2006 FHCS revealed shortcomings in the Leadership and Knowledge Management Index, which indicates the extent employees hold their leadership in high regard, both overall and on specific facets of leadership. Academy staff's research supported the survey results. A consistent problem mentioned by staff was that supervisors often were promoted into their positions based on their technical ability and that they lacked adequate training to supervise people. The Panel believes that this is a byproduct of EM's historical lack of attention to the selection, training, and development of its supervisors, which would enable them to become effective leaders of people. **In its August 2007 Observations Paper, the Panel proposed that EM conduct its own in-depth assessment to determine the root causes of the EM-wide and site-specific negative employee perceptions identified in the 2006 FHCS and this study, and develop and implement appropriate strategies to address these issues. The Panel also proposed that the EM HC staff examine the selection processes used to ensure that due consideration is given to candidates' possession of**

¹⁵¹ EM staff responses to the FHCS are included in Appendix D, Section VIII, "Workforce Environment."

¹⁵² For the January 2007 Observations Paper, Academy staff calculated EM staff responses to competency/training-based questions posed to supervisors and non-supervisory staff using a scale of one to five, with five being the highest rating. Responders included staff from Savannah River, the Carlsbad Field Office, and headquarters staff located in both the Forrestal and Cloverleaf locations. The questions and findings are found in Appendix D, Section V, "EM Competency Assessment." Academy staff continued to ask these questions during the remaining site visits. Although not officially tabulated, the responses at those sites were consistent with the earlier sites visited.

supervisory/managerial competencies, and that EM develop a leadership training program to provide its current and future supervisors/managers with needed competencies.

To address the weaknesses identified in the FHCS and the Panel's proposals, EM:

- conducted focus groups and working groups to identify concerns and challenges
- discussed employee issues at recent conferences of its senior leadership, and shared success stories to identify EM best practices
- started enrolling new supervisors in the new DOE "Supervisor Survivor Skill" course
- evaluated the supervisory/managerial selection process to ensure due consideration of supervisory/management competencies in the hiring process
- is establishing a Leadership Excellence Program to provide its current and future leaders/managers training to improve needed competencies

Diversity and Representation

Recent statistics reflect EM's workforce to be 61 percent male and 75.5 percent non-minority. Table 10 provides a breakdown of the EM workforce compared to the government-wide and overall civilian labor force (CLF).

Table 10: Gender, Race, & National Origin Composition of the EM Workforce Compared to the Government-wide and Overall Civilian Labor Force

Workforce	American Indian	Asian	Black	Hispanic	White	Male	Female	Disabled
EM-wide	2.0%	4.8%	12.30%	5.4%	75.5%	61%	39%	6.9%
Government-wide	1.9%	4.9%	17.4%	7.3%	68.5%	56%	44%	8.0%
Civilian Labor Force	0.8%	4.0%	10.1%	12.6%	71.4%	54.5%	45.5%	Not reported

Source: Federal Civilian Workforce Statistics, *The Fact Book*, 2005 Edition & August 2007 draft EM HCMP.

The numbers highlighted in yellow are the areas where the EM workforce is underrepresented when compared to the CLF. EM's workforce has less than half the Hispanic representation of the CLF, 5.4 percent versus 12.6 percent. EM's representation of females (39 percent) also is below the CLF mark of 45.5 percent.

As noted in the Introduction of this report, in late 2006, EM leadership established an Embracing Diversity Working Group, which consists of 13 senior EM managers from headquarters and the field. The group's charter is to address specific workforce diversity-related issues within EM and to develop innovative strategies necessary to recruit and retain diverse entry-level, mid-level, and senior-level staff. To date, the group has reviewed existing recruitment and retention strategies; benchmarked practices of other agencies; and conducted an EM employee survey on recruitment and recruitment strategies. In June, the group presented two pilot training classes on

the cultural awareness and value of diversity. One course was designed for supervisors and managers and the other for employees. The eight-hour course is now mandatory for all supervisors and managers.

In addition to the Working Group's efforts, EM also issued its HCMP, which affirms diversity as an organizational operating principle. As noted earlier in this chapter, it also developed the EM Career Intern Program, which offers EM an opportunity to change the representational composition of its workforce. EM has hired its first 25 interns, and they have a 60 percent minority and 56 percent female representation.¹⁵³

The Panel was very pleased to see EM bring these new employees into the organization and their diverse representation. But it also was concerned, based on the 2006 FHCS and Academy staff interviews with EM employees, that some of the interns' "water cooler" discussions with their coworkers, where they share perceptions about their work environment, could be toxic to the interns' perceptions of EM and to their retention. As noted above, EM has taken steps to address negative employee perceptions. Until a more favorable organizational climate is demonstrated, however, the Panel believed that EM needed to be candid with its interns and other new staff members regarding the work environment that they were entering. **In its August 2007 Observations Paper, the Panel proposed that EM's interns and new staff member orientation programs include information on the challenges EM is overcoming and the impact they have had on the staff, and how the new members of the workforce are part of the solution. Intern supervisors, trainers, mentors, and coaches also should be well prepared to address these issues.** EM has developed an intern orientation program that addresses the Panel's concerns. It also is including as part of its orientation for all employees, one-on-one sessions between the new employees and their supervisors that include a discussion of EM's work environment and employee attitudes, and the new employees' role to help transform the organization.

The Panel applauds EM's initiatives to improve its work environment; the selection and quality of its leadership; and representation and diversity issues. To ensure that these efforts achieve the desired results, the Panel believes that EM will need a mechanism to monitor and evaluate them.

The Panel recommends that EM develop evaluation methodologies that will periodically assess the status of its initiatives to improve EM's workforce environment and diversity against stated objectives in order to ensure progress is being made.

¹⁵³ Additional information on the composition of the first intern class is contained in Appendix D, Section VIII, "Workforce Environment."

ATTACHMENTS

ATTACHMENT 1: Actions to Implement Academy Proposals

ATTACHMENT 2: Panel and Staff

ATTACHMENT 3: Individuals Interviewed or Contacted

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
OM-1—Plan to Implement the Reorganization The Panel proposes that EM develop a plan that identifies the actions needed to fully implement the reorganization, including the completion of the functional analysis of its operations; the creation of standard operating procedures and program plans; and a review of delegations of authority. The plan should include timeframes to complete all actions and identify individuals responsible for each action item.	EM established a working group consisting of senior EM executives to lead this effort. The approach has been to conduct a fundamental analysis of the roles, responsibilities, authorities, and accountabilities (R2A2) of the current EM organization. EM also is in the process of completing flow sheets for standard operating procedures and issuing updated delegation letters to office directors.	EM's actions to date have been very useful. The Panel recommends that EM institutionalize a management action planning process to guide its management improvement activities.
OM-2—Management Office The Panel proposes that the Assistant Secretary establish an office reporting to him that is responsible for management analysis activities and other management functions such as policy issuance.	EM has agreed to implement, and has appointed a director and detailed staff to the office, and hired support contractors.	The new office will have responsibility for action planning.
OM-3—Chief Business Officer The Panel proposes that the Assistant Secretary use one of EM's senior executive service slots to create a Chief Business Officer position, filled with a term appointment, to lead and oversee EM's mission support DAS offices. Once EM has fully implemented the reorganization, including completing a functional analysis of all offices, developing standard operating procedures, and delegating authorities down through the organization, the Assistant Secretary should determine whether to retain the position as a term appointment, make it permanent, or abolish it. The Panel further proposes that if the Assistant Secretary creates this position, that the management analysis office recommended above report to the Chief Business Officer.	EM is choosing not to implement.	The Panel is no longer pursuing this proposal. Changes in senior staff have altered the basic circumstances, and the temporary position may no longer be necessary.

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
OM-4—EMCBC <p>The Panel proposes that the Assistant Secretary announce immediately his intention to create a long-term vision for the EMCBC and that the EMCBC report to the Chief Business Officer. The Panel further proposes that the Assistant Secretary launch a collaborative effort involving staff from the EMCBC and other affected headquarters and field offices to determine how mission support services should be provided throughout the complex. Once EM senior leadership decides how best to provide mission support services, the Assistant Secretary should designate a responsible officer to develop an action plan to achieve that vision and oversee its implementation.</p>	<p>EM is implementing except the change in reporting. It is addressing proposals OM-4 and HC-2 together.</p>	<p>This is proceeding well.</p>
OM-5—Transfer of Regulatory Compliance and Engineering and Technology to the COO <p>The Panel proposes that the Assistant Secretary realign the offices of Regulatory Compliance and Engineering and Technology to report to the Chief Operations Office.</p>	<p>EM is choosing not to implement.</p>	<p>The Panel is no longer pursuing in order to avoid another major reorganization. However, EM is enhancing the staff resources reporting to the COO, which was one of the underlying purposes of the original Panel proposal.</p>
OM-6—Roles of the PDAS and COO <p>The Panel proposes that the Assistant Secretary, working with the PDAS and COO, define the roles and responsibilities for his top leadership team and take the appropriate steps to ensure that his expectations are being met.</p>	<p>EM agrees. The new PDAS and COO designees are developing on a cooperative basis the roles and responsibilities of those offices. The COO has been tasked with defining work in that office. Within one month after that, EM will define how those functions relate to the PDAS.</p>	<p>The Assistant Secretary will need to ensure that the roles and responsibilities for the PDAS and COO being developed are consistent with his vision of the organization.</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
OM-7—Field Request Tracking System The Panel proposes that the COO develop a tracking system that enables her office to manage requests for information/action made to field sites.	The tracking system was implemented, but was not working well, especially at Hanford. EM now plans to discuss with field sites where the new system is not functioning well. EM also has decided that the Senior Program Manager, not the task requestor, will assess the amount of time required for task completion.	The report also raises the issue of non-EM offices that also task the field, and recommends tracking those requests as well.
OM-8—Revival of Efforts to Define Roles of PDAS and COO The Panel proposes that the Assistant Secretary revive his efforts to define the roles and responsibilities of the PDAS and COO in accordance with his vision of how the organization should operate, establish clear expectations for their performance, and hold them accountable for meeting those expectations.	EM believes this has now been addressed by virtue of the new leadership and actions taken on OM-6.	The Panel supports the efforts to develop a cooperative relationship between the new PDAS and COO. Nevertheless, the Panel believes that the new agreements should be documented and approved by the Assistant Secretary.
OM-9—R2A2 Working Group The Panel proposes that the Assistant Secretary ensure that the work of the R2A2 Working Group is consistent with his organizational model of how EM should function within the existing structure.	EM has transferred responsibility for this from the R2A2 working group to the new management office which will incorporate new roles now being put in place.	The report recommends that until the new office is properly staffed to handle this responsibility, that it use the expertise of the original working group to assist in the effort.

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
<p>OM-10—Analysis of COO's Office</p> <p>The Panel proposes that the COO, in consultation with the Assistant Secretary and PDAS, define the work the COO's office must perform; determine the staff capacity needed to perform that work; assess the capabilities of the current COO staff to perform the work; and address any skill gaps through training and developing existing staff or adding additional resources to the office. The type and duration of the COO's staff field experience should depend on each staff member's job responsibilities. This analysis also should include a review of staff location and assignments versus efficiency.</p>	<p>The COO's office has developed a new plan for organizing and staffing that organization and presented it to Academy staff.</p>	<p>The plan addresses the Panel's concerns and should be implemented as quickly as possible.</p>
<p>OM-11—Role Definition for the Office of Project Recovery</p> <p>The Panel proposes that EM clearly define the Office of Project Recovery's roles and responsibilities vis-à-vis site management; develop standard operating procedures for how that office works with site management; and develop criteria for when that office is brought in to assist a project and when its assistance is no longer required.</p>	<p>This is now being done as part of the analysis of the COO's office.</p>	
<p>OM-12—Realignment of the Office of Project Recovery</p> <p>The Panel proposes that EM realign the Office of Project Recovery under the COO to better utilize those resources for all of EM's troubled projects.</p>	<p>EM agrees. However, the office will remain a separate entity within the COO's office.</p>	<p>The Panel concurs.</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
OM-13—Consolidation of Two Hanford Offices <p>EM should develop a plan to consolidate the soils and groundwater activities at the Hanford Site. It also should examine the organizational alignment of its subject matter experts (facility representatives, safety, quality assurance, etc.) at the site to determine whether centralizing those functions into a single office serving both site offices would provide more efficient and effective services. Finally, EM should begin to develop a long-range plan to combine the operations of the two Hanford site offices.</p>	<p>EM agrees with the consolidation of soil and groundwater proposal and the COO will work with the field to accomplish this.</p>	<p>EM still needs to address the other consolidation issues raised by the Panel. A specific recommendation to that end is included in the report</p>
OM-14—HQ Interaction with Hanford Site <p>The Panel proposes that the COO work with the Hanford site offices' leadership to gain a full understanding of headquarters interactions with those offices and the impact headquarters' requests/requirements are having on the site offices' ability to manage their work, and to develop a proposal to address the issues identified.</p>	<p>EM agrees and will work with the Hanford site offices on this issue.</p>	<p>The Panel believes that the COO should examine the headquarters' interaction throughout the complex and rethink the entire procedure as described in OM-7.</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
<p>HC-1—Hiring Control Change</p> <p>The Panel proposes that EM's hiring controls program be modified to provide EM leadership necessary oversight but delegate authority to headquarters and field managers to hire and manage their workforces within a delegated resource level.</p>	<p>The proposal has been implemented. EM promulgated a revised human capital policy that restores to managers in headquarters and the field many of the authorities for hiring and managing workforces, but retains headquarters oversight and certain hiring controls.</p>	<p>This was the first Academy proposal implemented by EM. EM reports, however, that the hiring lag has not yet been significantly diminished. Part of the delay in closing the gap can be attributed to the fact that some of the initial vacancies are filled internally, which results in domino effect vacancies. Another contributor to the delay is that selecting officials (many of whom are in acting capacities) are so engrossed in work that they are having difficulty finding the time to complete the hiring process.</p> <p>Another major factor is the lack of EM-wide HR servicing metrics to ensure efficiency and accountability.</p>
<p>HC-2—Internal Advisory Group on the Cadre</p> <p>The Panel proposes that EM convene an internal advisory group of managers, project directors, and financial and human capital/human resources (HC/HR) professionals to identify the role and future vision for the cadre and make proposals on its appropriate size, skills mix, and operating procedures.</p>	<p>EM is implementing in conjunction with proposal OM-4 on defining the future of the EMCBC. The new COO has committed to conducting a comprehensive review, including the size and skill mix of the cadre.</p> <p>At a Human Capital Steering Committee (HCSC) meeting on Nov. 7, 2007, EMCBC and the COO office were assigned the responsibility to develop a charter for the cadre.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
<p>HC-3—Human Capital Steering Committee</p> <p>The Panel proposes that EM convene an HCSC that includes senior managers from headquarters and the field and financial and HC professionals. This Steering Committee should convene periodically throughout the year to monitor and advise the DAS for HC and Business Services on all HC initiatives, assist in implementing and revising the Human Capital Management Plan (HCMP) as needed, and communicate HC strategies and initiatives throughout the complex. The Assistant Secretary or PDAS should actively participate with the Steering Committee to ensure that EM's leadership embraces HC planning and implementation as a managerial responsibility.</p>	<p>The EM HCSC has been established and is actively conducting business. It has met four times and is addressing a variety of human capital issues including the development of a corporate human capital framework; the role and vision for EMCBC; competency assessment and resource planning; and diversity. The Committee approved a new framework for EM's human capital management on July 23, 2007. The role of the PDAS has been clarified. The PDAS will attend each EM HCSC meeting.</p>	
<p>HC-4—Working with DOE HR Office</p> <p>The Panel proposes that EM and DOE headquarters work together to develop and implement an HR strategy that addresses all of EM's current and anticipated personnel needs and HCMP initiatives. They also should continue regular dialogues to resolve all issues related to EM's personnel actions until such time as DOE headquarters develops and implements HR service level standards. The Panel further proposes that EM consider the use of an impartial third party to facilitate this effort.</p>	<p>EM and DOE HR have established a process to utilize the EMCBC for some personnel processing actions. The DOE HR Deputy Human Capital Officer and the EM Deputy Assistant Secretary for Human Capital are holding regular, periodic meetings to monitor these issues. EM does not believe the involvement of a third-party participant is necessary to facilitate remedial actions.</p>	<p>This is unlikely to be completely implemented without a review of DOE-level activities. However, the Panel still believes that it is critical for EM and DOE HR to agree on the long-term HR role of the EMCBC. Otherwise, this will continue to be a contentious issue that unduly consumes the time of EM and DOE HR staffs.</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
HC-5—HC Planning Office <p>The Panel proposes that EM reconsider its plan for expanding/staffing the HC Planning Office and that it (1) develop a plan that considers alternative means to meet its short-term HC planning needs, such as using contract support, and focuses on efficient delivery of services in terms of numbers/occupational specialties of positions dedicated to the function, and that it (2) ensure that staff within this unit have a substantial core of HR/HC competencies.</p>	<p>EM recently hired an SES-level Director for Human Capital Planning.</p> <p>EM is in the process of acquiring other human capital skills and competencies through new hires. There will be three FTEs hired with HR/HC backgrounds.</p> <p>EM is acquiring contractor support for its HR operations.</p> <p>EM has reorganized its human resources and human capital staffs under the leadership of the new SES director to create synergies and improve planning and execution efficiencies.</p>	<p>EM has taken steps to improve its HC/HR capacities. EM, having had one engineer transferred from another office into the HC office, has no plans to add additional engineers to the staff.</p>
HC-6—Workload Forecasting System <p>The Panel proposes that EM develop a workload forecasting system for the complex so that workforce resource planning can be calibrated to its mission requirements.</p>	<p>EM agrees and has hired a support services contractor to assist in this effort.</p>	<p>Academy staff have met with the contractor to explain the Panel's views.</p>
HC-7—SES Performance Awards <p>The Panel proposes that EM conduct an internal validation of its SES performance award and cash award practices to ensure the integrity of the actions taken. The Panel also proposes that EM assess whether the current practices for appraising and awarding executives at non-EM sites are equitable with respect to EM's practices, and coordinate changes with the Offices of Science and Nuclear Energy as appropriate. Finally, the Panel proposes that EM review its SES recognition practice in future years to ensure that distributions do not inadvertently penalize recipients based on the location of their employment/reporting relationships.</p>	<p>EM has established an SES award review group, including both field and headquarters officials, which reviewed all proposed distributions of awards by location for the FY 2006 performance cycle. EM plans to use the same procedure for the FY 2007 cycle. For SES at non-EM owned sites, EM is providing input to the appropriate Lead Program Office officials.</p>	<p>The Panel has recommended that EM continue to monitor the SES performance recognition program to ensure equity between all EM SES members, regardless of location.</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
HC-8—EMCBC Support for EM Staff at NNSA Sites	<p>The Panel suggests that EM assess the feasibility of having the EMCBC provide HR servicing to EM staff at NNSA sites.</p>	<p>The EMCBC assumed responsibility for HR servicing of the EM staff at NNSA's Oakland and SPRU sites after the Oakland Operations Office closed. EM and NNSA have not yet negotiated a change in the servicing agreement for EM employees at the remaining NNSA sites.</p>
HC-9—GS-201 Staff	<p>The Panel suggests that EM develop a proposal for DOE HR's consideration that provides a basis for allowing EM to hire staff in the GS-201, Personnel Management series.</p>	<p>EM disagrees. It believes that it should hire people in the 300 series with 201 experience. It is looking for human capital strategists rather than technical human resources experts.</p>
HC-10—HR Servicing Metrics	<p>The Panel proposes that EM develop a strategic vision for EM HR service delivery that establishes EM-wide HR servicing metrics and measures of efficiency, and identifies how the EM site HR offices, the EMCBC HR office, and contract HR service providers should be optimally used to meet ongoing and surge HR workload.</p>	<p>EM has started to build a database to capture the needed information to support the strategic vision. EM will work through the HCSC to develop an approach and conduct research on suitable metrics with an anticipated completion for approach and research of 12/31/07.</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
HC-11—Headquarters HR Servicing The Panel proposes that DOE HR and EM bring to closure as soon as possible all issues and questions related to long-term HR servicing for EM headquarters so future objectives and work requirements are clear to all parties and staff time does not continue to be consumed on this matter.	EM and DOE headquarter are working together on this. They have agreed to have the EMCBC process some EM headquarters actions.	Sec HC-4.
HC-12—Staff Planning Methodology The Panel proposes that before EM expands to the rest of the complex the staff planning methodology used in headquarters, that it add more rigor to the existing process.	EM agrees and has hired a contractor to assist in this effort.	This is similar to HC-6. Academy staff have met with the contractor to explain the Panel's views.
HC-13—Long-Term & Yearly Workload The Panel proposes that once EM has established a rigorous staff requirements methodology, it should develop long-term staff estimates for its projects as well as staff estimates for the immediate budget year.	EM agrees and will adopt this as a "next step." EM will use the Human Capital Steering Committee to tie to project management procedures. EM has included the DAS for Acquisition and Project Management to the HCSC. It also is incorporating project management, including the Best-in-Class initiative, as a key component of its human capital planning.	To be completed in conjunction with HC-6 and -12.
HC-14—Organization and Position Design The Panel proposes that EM include an organization-wide analysis of its occupational distribution, pay plan utilization, and supervisory ratios as part of its overall workload planning initiative.	This will be done as part of the workload forecasting effort.	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
HC-15—Workforce Environment Assessment <p>The Panel proposes that EM conduct its own in-depth assessment to determine the root causes of the EM-wide and site-specific negative employee perceptions identified in the 2006 Federal Human Capital Survey and this study, and develop and implement appropriate strategies to address these issues. These strategies should include action plans and evaluation methodologies to ensure that improvements in the workplace environment are being accomplished throughout the EM complex.</p>	<p>EM is adopting a two-pronged strategy, with approaches for both EM headquarters and the sites. A focus group approach used in the field is being adopted for EM headquarters. All EM sites and headquarters are developing corrective action plans.</p> <p>EM also plans to utilize periodic leadership and organizational assessment at headquarters and site offices to address issues related to the workforce environment.</p>	
HC-16—Leadership Training <p>The Panel proposes that the EM HC staff examine the selection processes now used to ensure that due consideration is given to candidates' possession of supervisory/managerial competencies, and that EM develop a leadership training program similar in scope to its Project Management Training Program as a means to provide its current and future supervisors/managers with needed competencies.</p>	<p>EM has enthusiastically adopted this proposal and is developing a Leadership Excellence Program.</p>	
HC-17—Guidance for Interns <p>The Panel proposes that EM's intern and new staff member orientation programs include information on the challenges EM is overcoming and the impact they have had on the staff, and how the new members of the workforce are part of the solution. Intern supervisors, trainers, mentors, and coaches also should be well prepared to address these issues.</p>	<p>EM has now developed an intern orientation program. One session has been conducted at Richland, WA. A memo to mentors also has been issued. In addition, orientation for all new employees includes one-on-one sessions between the supervisor and employee that includes a discussion of EM's changing work environment, employee attitudes, and the employee's role to help transform them.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-1—Guidance for Appropriate Contract Types	<p>The Panel proposes that EM, in consultation with the DOE headquarters Office of Procurement and Assistance Management (OPAM) and the Office of General Counsel, develop detailed guidance for determining the appropriate contract types for EM acquisitions. The guidance should be included in subsequent Executive Leadership Program workshops.</p>	<p>A guidance memorandum to field managers was released on May 27, 2007. Further guidance was provided to EM field managers in July 2007.</p>
A/PM-2—Business Clearance Process	<p>The Panel proposes that EM work collaboratively with OPAM and the Office of General Counsel to do an engineering analysis of the DOE business clearance review process, including flowcharts, to identify the causes for the current delays, and to reengineer the process to incorporate servicing metrics and the shared commitment among the offices to produce a more efficient, effective, and timely review of documents generated during the course of an EM acquisition.</p>	<p>EM has done as much as it can to update the process chart. DOE headquarters has undertaken an effort to reengineer its business clearance review process. OPAM released a briefing on planned actions on October 18, 2007 and the reengineering team's final report on November 14, 2007. OPAM is developing an implementation plan.</p>
A/PM-3—Dealing with the Contractor	<p>The Panel proposes that EM leadership develop guidance for EM staff that clarifies the staff's role in dealing with the contractor. The guidance should distinguish technical direction responsibilities, which may be limited in a performance-based environment, from actions to proactively monitor contractor performance and address detected performance problems and issues. This guidance should be on the agenda of subsequent Executive Leadership Program workshops.</p>	<p>Guidance to the field was released May 31, 2007. In addition, the West Valley and Moab sites are participating in a "Partnership for Public Service Innovation Pilot."</p>

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-4—Acquisition Center The Panel proposed that EM revise its plans for the Acquisition Center to locate the contract placement function at the EMCBC.	Accepted and implemented. Procurement directors have been briefed and staff has been hired at the EMCBC to implement.	The first new procurement under these procedures is the Portsmouth gaseous diffusion plant decontamination and decommissioning.
A/PM-5—NAVFAC Review The Panel proposes that, in addition to the review of National Aeronautics and Space Administration and Naval Air Systems Command models, the DAS for Acquisition and Project Management include an examination of the acquisition planning policies and practices of the Naval Facilities Engineering Command (NAVFAC) as part of an action plan to improve EM's acquisition planning and execution. In addition, the action plan should include a comparison of other agencies' models with EM in terms of workload and the skills, knowledge, and abilities of the respective staffs.	EM acquisition staff visited NAVFAC on June 5, 2007 and issued a report on July 27. EM believes there is much at NAVFAC that EM could adopt.	
A/PM-6—Plan for Assuming HCA The Panel proposes that the DAS for Acquisition and Project Management develop and execute an implementation plan for assuming EM Head of Contracting Activity (HCA) responsibilities.	The HCA Plan was submitted to OPAM on August 31, 2007. The Director of OPAM issued the delegation on November 15, 2007. Implementation will proceed immediately.	
A/PM-7—1102 Staffing The Panel proposes that the Assistant Secretary develop a staffing request for necessary GS-1102 procurement analysts and submit it to DOE headquarters for approval. The request should contain a specific acknowledgement that these positions will not be used to perform operational contract placement or administration work.	This proposal has been implemented at the direction of the Deputy Secretary. Approval was received in February. EM has filled 10 of its vacant GS-1102 positions (6 at the EMCBC and 4 at EM headquarters). The announcement for the final position closed on October 30, 2007.	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
<p>A/PM-8—Acquisition Oversight</p> <p>The Panel proposes that the DAS for Acquisition and Project Management submit to DOE headquarters a detailed proposal for improving the current acquisition oversight program. The proposal should revise the business clearance process as follows:</p> <ul style="list-style-type: none"> • Sites annually submit their lists of projected acquisitions over \$5 million to the EM HCA and Office of Procurement and Assistance Management. • EM acquisition sites approve all actions \$20 million or under. • All actions from \$20 million to \$100 million are subject to review by the EM HCA and DOE General Counsel. • Actions over \$100 million are subject to the existing business clearance process. <p>The proposal also should include an acquisition management review program.</p>	<p>OPAM has raised slightly EM's business clearance levels. OPAM also has initiated a review of the business clearance process. (See A/PM-2.) Procurement reviews have been included in the HCA plan and they will be a feature of the EM Acquisition Center.</p>	<p>Implementation awaits OPAM actions. The report stresses the Panel's support for a \$100 million threshold for business clearance reviews of EM transactions.</p>
<p>A/PM-9—Financial Assistance Consolidation</p> <p>The Panel proposes that the DAS for Acquisition and Project Management develop a plan for centralizing the award and administration of all EM financial assistance instruments at the EMCBC.</p>	<p>EM accepted this action. A memo to the field was issued on June 1, 2007. EM is now reviewing comments from the field and plans to implement by the end of FY08.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-10—EMCBC Cost and Price Support The Panel proposes that the DAS for Acquisition and Project Management and the EMCBC director arrange for the EMCBC to provide cost and price analysis support to all EM sites. The EMCBC also should work with sites to help them develop local acquisition guidance and templates.	EM notes that they began this effort in October of 2006. Their goal now is to establish the policy, understand the need, and put a plan together to resource it correctly. Draft implementation plan was issued and comments received from EM field sites. Analysis of comments completed on 9/30/07. Final step is to issue a memorandum prior to 12/30/08 announcing roles and phased implementation approach.	
A/PM-11—PBA Initiative The Panel proposes that the DAS for Acquisition and Project Management develop and implement a Performance-Based Acquisition (PBA) initiative, including processes for ensuring that PBA contracts conform to regulatory guidance before recording them as a PBA action in the Federal Procurement Data System.	EM believes that it has implemented a robust, performance-based acquisitions program, but that more training is necessary. Employees in EM's Office of Procurement Planning have completed a basic PBA course. In August 2007, an EM-50 task order included up to three just-in-time PBA training courses for EM integrated project teams. The memo on contractor guidance referred to in A/PM-3 also includes guidance on managing performance-based contracts.	
A/PM-12—IPABS Modification The Panel proposes that EM modify the Integrated Planning Activity and Budgeting System (IPABS) to enable it to compare Earned Value Management System (EVMS) cost and performance information with budget data, and that the results of this analysis are included in future Quarterly Project Review (QPR) reports and other project status documents.	EM included limited budget data in the August/September/October 2007 round of QPRs. EM is still reviewing its ability to provide a full budget comparison. The IPABS Steering Committee also is working on overall replacement/modification of IPABS. EM looking to February 2008 for completion to use in March QPRs.	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-13—Technology Maturity Levels The Panel proposes that EM implement Technology Maturity Levels (TML), and institute a formalized process for assigning TML ratings to proposed technological solutions.	EM has piloted a TML framework (known as Technology Readiness Assessments) on selected facilities at the Office of River Protection, Richland, and Savannah River. EM is developing guidance based on lessons learned from the pilots to guide the implementation of TML on other EM projects.	GAO has made the same proposal. As a result, the Department, through OECM, also is attempting to develop this. EM is likely to be the lead office.
A/PM-14—Internal Cost Estimating Capacity The Panel proposes that EM develop an internal cost-estimating capacity in EM headquarters as well as at EM's field sites. EM should expand the work scope of its existing cost-estimating contractors to have them develop training and mentoring programs for EM's workforce.	EM-50 is in discussions with EMCBC to centralize EM cost estimating capability at the EMCBC. Currently, Project Management Oversight staff have the cost estimating responsibility. EM also is working to identify resource needs as well as a corporate strategy as part of the Best-in-Class initiative.	
A/PM-15—EVMS Standard Cost Reports The Panel proposes that EM require its contractors to produce EVMS' five standard Cost Performance Report reporting formats. Further, the Panel proposes that EM develop a mechanism to monitor contractors' EVMS in order to ensure the integrity of the data produced.	<p>DOE is working on 19 guides to implement DOE Order 413. EM is participating in the drafting of the EVMS guide and is determining types of reports to be required. A tasking was issued on 7/6/07. This will be a requirement for contracts.</p> <p>A July 6, 2007 memorandum directed sites to develop their own EV Surveillance Plans by October 1, 2007 and to provide results of reviews upon completion (some reviews may not begin until early 2008 following baseline validations). All sites have provided the status of their plans. These are now being analyzed and a summary will be developed by December 30, 2007.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-16—Project Management Training <p>The Panel proposes that EM modify its project management training to include an increased focus on the capabilities and limitations of its tracking and reporting systems—EVMS, IPABS, and Project Assessment Reporting System. EM also should develop a mentoring program where seasoned federal project directors (FPDs) work with less-experienced FPDs in the use of these systems. EM should include this mentorship as a standard in FPDs performance appraisals.</p>	<p>EM concurs and is working with its contractor to develop a training program in connection with new IPABS capability.</p> <p>EM also will remind FPDs in the upcoming FPD policy memo of the requirement to have mentoring plans in place. EM currently has no plan to include mentoring as a separate element in FPDs' performance plans. EM will decide by the end of the year whether this will be a standard in performance appraisals.</p>	<p>Panel concurred in the EM approach.</p>
A/PM-17—Acquisition Processes Review <p>The Panel proposes that the DAS for Acquisition and Project Management review all EM processes for reviewing and approving acquisition transactions at EM headquarters. The review should encompass any transactional review requirements generated by the reengineered business clearance process as well as those generated by the Acquisition Center or new HCA authority. The review should focus on streamlining existing or proposed processes and eliminating those requirements that add little value and/or would impose unacceptable delays in processing acquisition actions.</p>	<p>EM will begin on this one month after the OPAM business clearance initiatives are released.</p>	
A/PM-18—Delegation Level Pilot <p>The Panel suggests that EM draft a proposal to OPAM to pilot test the review thresholds contained in the Panel's second Observations Paper at a single EM site, such as the EMCBC. The proposal should provide a description of the site's capability and processes for ensuring adequate review of actions below the elevated thresholds.</p>	<p>EM will submit a proposal for a "higher" level pilot six months after receiving HCA authority.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-19—WTP Lessons Learned <p>The Panel proposes that the Assistant Secretary prepare and issue a document that summarizes the basic factual circumstances related to the cost growth and schedule slippage on the Waste Treatment and Immobilization Plant project and identifies the lessons that could be applied to other EM acquisition situations.</p>	<p>EM has agreed to prepare a short document as requested. This is expected by April 2008.</p>	
A/PM-20—Project Management Standardization <p>The Panel proposes that EM standardize and integrate project performance management tools across the complex, particularly those that supplement or are integrated with the Earned Value Management System. EM should conduct a complex-wide assessment to ascertain what tools FPDs are now using to manage project performance on a day-to-day basis. The results of this assessment should form the basis for developing a standardized project management “toolbox.”</p>	<p>EM agrees and will use the Best-in-Class review results to identify. Full implementation is expected during 2008.</p>	
A/PM-21—Color Assessment Scheme <p>The Panel proposes that EM examine its procedures for responding to, and holding field personnel accountable for, the color assessments of projects. These procedures should address, but need not be limited to, concrete definitions for the “meaning” of each assessment color.</p>	<p>EM is working now with OECM to separate ‘red’ and ‘yellow’ projects in the Deputy Secretary’s report. Regardless of what happens with that report, however, EM will change internal procedure a month after completion of OECM’s assessment.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-22—Project-Specific Success Metrics <p>The Panel proposes that the DAS for Acquisition and Project Management work with each field office to produce project-specific success metrics. These metrics should take into account the type of work being performed and the specific facilities involved and technologies deployed, and should ideally be devised in collaboration with relevant contractors. These metrics should be reported on a quarterly basis as part of the EM QPR presentation format.</p>	<p>EM is now developing a template. This also will be part of the Best-in Class effort. Reports are hoped for in early in 2008. Some of the information will flow into the QPRs.</p>	
A/PM-23—Further IPABS Modification <p>The Panel proposes that the EM IPABS Steering Committee produce a formal requirements document that defines the functional requirements for replacing or modifying IPABS.</p>	<p>EM agrees and will have the document by Dec. 2008.</p>	
A/PM-24—General Assessment of QA <p>The Panel proposes that the DAS for Safety Management and Operations build upon EM's current assessment of Quality Assurance (QA) at construction sites, and perform a general assessment of QA. This assessment should focus on: translating QA guidance into a functional QA regime at the site level in a way that accounts for existing staffing levels and organizational structure; assessing staffing requirements needed to perform QA functions at an optimal level; clearly identifying a well-qualified focal point for QA at EM field sites; and providing the QA focal point with direct lines of access to top managers at the site level.</p>	<p>The COO is in the process of establishing a team for this purpose. A QA manager is being designated and staff is being added.</p>	

Actions to Implement Academy Proposals

PROPOSAL	Actions Taken by EM	Academy Panel Remarks
A/PM-25—Unfunded Contingency <p>The Panel proposes that EM undertake a study to determine whether, historically, the funds identified as “unfunded contingency” have been balanced between overruns and surpluses, as well as whether the practice has prompted an excessive need for project time extensions or reprogramming requests to Congress. EM should consider making the results of this study the foundation for a systematic reexamination of whether 50 percent is the appropriate confidence level to fund its operating and cleanup projects.</p>	<p>In response, EM agreed to initiate a three step effort:</p> <ol style="list-style-type: none"> 1. Complete by January 2008 an historical review of EM's use of unfunded contingency (particularly as it relates to requiring reprogramming requests, operating plan funding adjustments, or project schedule extensions). 2. Analyze the results of this review and identify alternative approaches by March 2008. 3. Evaluate current confidence levels for operating projects by June 2008. 	
A/PM-26—EM-Specific FPD Standards <p>The Panel proposes that EM undertake a study of the appropriateness of the DOE FPD certification standards to the unique operating and cleanup projects that characterize its project portfolio, and use the results as a basis to tailor a version of those standards specifically for EM FPDs.</p>	<p>The OECM protocol for required FPD levels for EM cleanup projects is based on an assessment of the five-year project cost rather than the entire project cost (used for line item projects). EM will review requirements and likely propose additional EM specific training for its FPDs. The estimated completion date is January 30, 2008. The House EWD Appropriations Subcommittee has expressed some preliminary support for EM to hire additional staff.</p>	

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KENTUCKY/OHIO

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Trichloroethylene or TCE recovered from the six-phase heating treatability study conducted at the C-400 chemical cleaning facility, ready for shipment and disposal, Paducah Gaseous Diffusion Plant, Paducah, KY (2003). Photo courtesy of the U.S. Department of Energy

Workers test the dimensions of each drum, verify the proper labeling and place them on the template that is used to align the drums on the lifting pallet, Brookhaven National Laboratory, Upton, NY (2005). Photo courtesy of the U.S. Department of Energy

Workers at the sludge retrieval and disposition project connect hoses to ports in the top of large diameter containers that will hold sludge from the north loadout pit in the K East Basin, until it can be grouted later this year, Hanford Site, Richland, WA (2004). Photo courtesy of the U.S. Department of Energy

Savannah River Site workers carefully maneuver a spent fuel cask, Savannah River Site, Aiken, SC (2005). Photo courtesy of the U.S. Department of Energy



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A Report by a Panel of the

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

for the United States Congress and the Department of Energy

OFFICE OF ENVIRONMENTAL MANAGEMENT: MANAGING AMERICA'S DEFENSE NUCLEAR WASTE

APPENDICES TO THE REPORT



2007

NATIONAL ACADEMY OF
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THE ACADEMY

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A Report by a Panel of the

**NATIONAL ACADEMY OF
PUBLIC ADMINISTRATION**

for the United States Congress and the Department of Energy

December 2007

**OFFICE OF ENVIRONMENTAL
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**MANAGING AMERICA'S DEFENSE
NUCLEAR WASTE**

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The views expressed in these appendices are those of the Panel. They do not necessarily reflect the views of the Academy as an institution.

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ACRONYMS

Academy	National Academy of Public Administration
ANSI	American National Standards Institute
ASM/CFO	Assistant Secretary for Management and Chief Financial Officer
ASME	American Society of Mechanical Engineers
BCP	Baseline Change Proposal
BNI	Bechtel National Inc.
BPO	Bureau Procurement Official
CBFO	Carlsbad Field Office
CD	Critical Decision
CH	Chicago
CLF	Civilian Labor Force
COE	U.S. Army Corps of Engineers
COO	Chief Operations Officer
Council	National Research Council
CPI	Cost Performance Index
CPIF	Cost Plus Incentive Fee
CPR	Contract Performance Report
CTC	Cost-to-Complete
CV	Cost Variance
D&D	Decontamination and Decommissioning
DAS	Deputy Assistant Secretary
DCMA	Defense Contract Management Agency
DNFSB	Defense Nuclear Facilities Safety Board
DoD	Department of Defense
DOE	Department of Energy
DS	Direct Supervision
ECAS	Environmental Cost Analysis System
ECES	Environmental Cost Element Structure
EIR	External Independent Review
EM	Office of Environmental Management
EMAAB	Office of Environmental Management Acquisition Advisory Board
EMCBC	Office of Environmental Management Consolidated Business Center
EMCIP	Office of Environmental Management Career Intern Program
EMIS	Office of Environmental Management Integrated Schedule
ESMD	Exploration Systems Mission Directorate
EV	Earned Value
EVMS	Earned Value Management System
facrep	Facility Representative
FEC	Facility Engineering Command
FHCS	Federal Human Capital Survey
FHV	Facility Hazard Value
FPD	Federal Project Director
FTCP	Federal Technical Capability Program

FTE	Full-Time Equivalent
FY	Fiscal Year
GAO	Government Accountability Office
GCA	Group Cash Award
GS	General Schedule
HC	Human Capital
HCA	Head of Contracting Activity
HCMP	Human Capital Management Plan
HR	Human Resources
HUD	Department of Housing and Urban Development
ICA	Individual Cash Award
ID	Idaho Operations Office
IDMS	Integrated Database Management System
IPABS	Integrated Planning, Accountability and Budgeting System
IPABS-IS	Integrated Planning, Accountability and Budgeting System—Information System
IPT	Integrated Project Team
IS	Indirect Supervision
ISMS	Integrated Safety Management System
IT	Information Technology
LASO	Los Alamos Site Office
LCC	Life-Cycle Cost
LLNL	Lawrence Livermore National Laboratory
LMI	Logistics Management Institute
MNS	Mission Needs Statement
NASA	National Aeronautics and Space Administration
NAVFAC	Naval Facilities Engineering Command
NE	Office of Nuclear Energy
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
NSO	Nevada Site Office
NSSC	NASA Shared Services Center
OCE	(U.S. Army Corps of Engineers) Office of Chief Engineers
OCM	Office of Contract Management
OECM	Office of Engineering and Construction Management
OH	Ohio Field Office
OPAM	Office of Procurement and Assistance Management
OPM	Office of Personnel Management
OR	Oak Ridge
ORP	Office of River Protection
PA	Performance Award
PADS	Procurement and Assistance Data System
PARS	Project Assessment and Reporting System
PBS	Project Baseline Summary
PCO	Project Control Officer
PDAS	Principal Deputy Assistant Secretary

PDRI	Product Definition Rating Index
PE	Procurement Executive
PED	Project Engineering and Design
PEP	Project Execution Plan
PIC	Project Integration and Controls
PMAP	Procurement Management Assessment Program
PMCDP	Project Management Career Development Program
PPC	Project Performance Corporation
PPPO	Portsmouth/Paducah Project Office
PPRI	Office of Project Performance and Regulatory Integration
PTC	Project Time & Cost, Inc.
QA	Quality Assurance
QPR	Quarterly Project Review
RACER	Remedial Action Cost Engineering and Requirements
RF	Rocky Flats
RFP	Request for Proposal
RL	Richland Operations Office
RMP	Risk Management Plan
RW	Office of Civilian Radioactive Waste Management
SA/SA	Special Act/Service Awards
SEB	Source Evaluation Board
SES	Senior Executive Service
SOMD	Space Operations Mission Directorate
SPI	Schedule Performance Index
SR	Savannah River
SRP	Standard Review Plan
SUMP	Site Utilization Management Plan
SV	Schedule Variance
TPC	Total Project Cost
TRA	Technology Readiness Assessment
TRL	Technology Readiness Level
WBS	Work Breakdown Structure
WIPP	Waste Isolation Pilot Plant
WTP	Waste Treatment and Immobilization Plant

INTRODUCTION

In September 2005, the House and Senate Energy and Water Development Appropriations Subcommittees asked the National Academy of Public Administration (Academy) to undertake a management review of the Department of Energy's Environmental Management Program (EM), emphasizing their concerns about how EM was organized and managed and its acquisition and project management operations. EM Assistant Secretary Rispoli asked the Academy to add another element to the study, an assessment of EM's human capital operations.

In April of 2006, the Academy convened an expert Panel experienced in organization, human capital management, acquisition, and project management to guide the project's research and make proposals to improve EM's operations. Staff experienced in these subject areas were recruited to support the Panel. For acquisition expertise, the Academy subcontracted with the Jefferson Consulting Group.

During the course of the study, the Panel provided EM with three unpublished Observations Papers, which gave the Panel opportunities to provide ongoing assessments of the problems it identified and proposals to address them. The extensive factual information in the papers was the basis for the Panel's proposals as well as the final recommendations in the report, published under separate cover, which summarizes the work that the Academy Panel and staff conducted during the last 19 months. The Academy Panel and staff determined that some of the detailed information in the Observations Papers, excluding data that had clearly been overtaken by events, should be made available to those who want to delve into more detail. These appendices are that detailed supplement. When possible and appropriate, data have been updated.

ORGANIZATION AND MANAGEMENT

I. THE 2006 REORGANIZATION OF EM HEADQUARTERS

EM is one of eight offices that report to the Department of Energy's (DOE's) Undersecretary for Energy, Science and Environment. EM's headquarters operations are located in Washington, DC and Germantown, MD, and its total federal staff authorization is approximately 1,500, the vast majority of which are located at EM's field sites. Its cleanup and closure activities, which were performed by a contractor workforce of approximately 34,000 in 2005,¹ take place in locations across the country. (This is discussed in Section II below.)

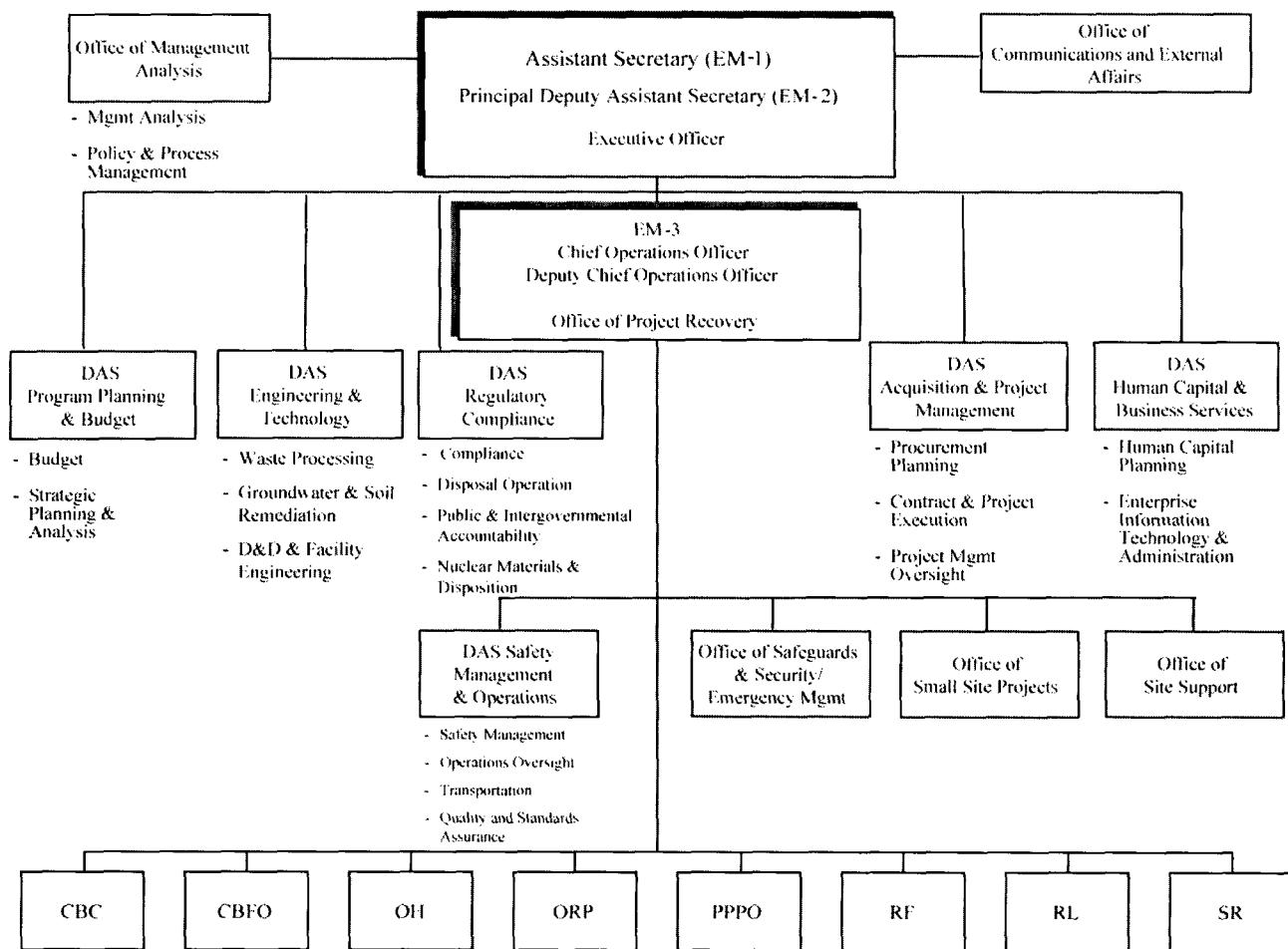
EM's New Headquarters Organization

At the end of December 2005, Assistant Secretary Rispoli rolled out a new organizational structure that he designed in consultation with the Principal Deputy Assistant Secretary (PDAS), the Chief Operations Officer (COO), the Deputy Assistant Secretaries (DASs), and some of the office directors. For about a month and a half, the senior management team sought input from managers and staff on the proposed reorganization. Even before the reorganization became official on May 28, 2006, staff started to work under the new structure. For any given issue, both the current and proposed managers for the function attended meetings. Figure 1 on the following page shows the new organization, including proposed changes that EM leadership announced at the July 2007 Panel meeting. The new structure reflects the areas that Assistant Secretary Rispoli wants "at the table" when decisions are being made. Notable additions to the organization are a new DAS for Acquisition and Project Management and a new DAS for Human Capital and Business Services, which reflect the importance the Assistant Secretary places on those areas. It also establishes an Office of Project Recovery² reporting to the Assistant Secretary. This office provides assistance to projects that are having difficulty. (This office is discussed in Section VI below.)

¹ EM's contractor workforce has declined. In 1994, EM had a contractor workforce of about 43,000.

² As originally established, the Office of Project Recovery reported directly to the Assistant Secretary, but EM recently proposed that the office report directly to the COO.

Figure 1: EM's Proposed Organizational Structure*



* Abbreviations include: Consolidated Business Center (CBC); Carlsbad Field Office (CBFO); Ohio Field Office (OH); Office of River Protection (ORP); Portsmouth/Paducah Project Office (PPPO); Rock Flats (RF); Richland Operations Office (RL); Savannah River (SR)

Another significant change in the new structure is that it provides a direct line of authority from the Assistant Secretary to the PDAS, to the COO, to the field, which is responsible for all program execution. According to EM's *Mission and Functions Statement* for the reorganization, the PDAS "serves as the alter ego for the Assistant Secretary." This changed the dynamics of the senior leadership team because prior to the reorganization, the COO reported directly to the Assistant Secretary.

With the creation of the Office for Acquisition and Project Management, five DASs also report to the PDAS. The DAS offices continue to be organized around functional areas, having topical responsibility by areas of expertise.³ For the most part, the functional responsibilities of these offices existed in the prior structure. However, the reorganization expanded and gave greater emphasis to some offices and totally restructured others. The DASs are responsible for setting

³ Although the DASs are organized functionally, they started to assign staff as primary liaisons with the field offices.

the parameters and policies that the field must execute; overseeing the field's implementation against those parameters and policies; assisting where there is a problem that must be worked through the EM/DOE headquarters system; and providing technical assistance as the field sites grapple with the complex issues associated with nuclear waste cleanup.

The Office of the Chief Operations Officer

The COO's office is the focal point of the headquarters structure. According to the *Mission and Functions Statement*, the COO's office provides "day-to-day operational oversight and management of the environmental health and safety, safeguards and security, emergency management, and transportation operations at EM sites and facilities." The COO is the first line supervisor for EM's eight field managers. Other than its reporting chain of command, which is now to the PDAS, the COO's office did not change significantly in the reorganization except that it expanded the safety area and added an office—Site Support and Small Projects, which is discussed in Section III.

II. EM'S FIELD STRUCTURE

EM carries out its cleanup responsibilities through a large field office structure that is centered around the sites of the former nuclear weapons complex, which was established in the early 1940s. For security reasons, the sites in the complex were geographically diverse, with the various sites having different pieces of the weapons production process. Some sites enriched uranium, others produced plutonium and extracted it, and still others manufactured the various components. This made sense from a security standpoint; however, it contributes to the complexity of the cleanup mission. Different types of facilities were constructed consistent with each site's part of the weapons production mission. Therefore, different types and forms of waste resulted at each site.

EM has eight major field offices where it has "landlord" responsibilities at the sites, i.e., EM is responsible for all aspects of site operations.

• Carlsbad Field Office	Carlsbad, NM
• Ohio Field Office	Springdale, OH
• Office of River Protection	Richland, WA
• Portsmouth/Paducah Project Office	Lexington, KY
• Rocky Flats Field Office	Rocky Flats, CO
• Richland Operations Office	Richland, WA
• Savannah River Operations Office	Aiken, SC
• Consolidated Business Center	Cincinnati, OH

The first seven of the sites listed are responsible for cleanup operations. The eighth—the Environmental Management Consolidated Business Center (EMCBC)—is a mission support office that provides human capital, financial, legal, contracting, logistics, and information technology (IT) support to the Ohio Field Office closure sites, the Rocky Flats Closure Project,

and as requested, to other smaller sites and EM headquarters.⁴ The EM managers at these sites report to the COO.

EM also has ongoing cleanup activities at several other sites where it is part of a multi-organizational operation and is not the lead secretarial office. Included among these are larger sites, such as the Oak Ridge Office in Oak Ridge, TN (owned by the Office of Science), and the Idaho Operations Office in Idaho Falls, ID, (owned by the Office of Nuclear Energy (NE)); and smaller sites, such as the Brookhaven National Laboratory in Islip, NY, (owned by the Office of Science). At these sites, EM is responsible only for its specific cleanup activities and does not have “landlord” responsibilities. EM gets its administrative support (procurement, personnel, etc.) from the landlord organizations. At the larger sites, the managers who head up the EM operations have a dual reporting relationship to both EM’s COO and the field manager of the entire facility. For example, the Deputy Manager for EM’s Idaho Cleanup Project, reports to both the COO and the manager of the Idaho Operations Office, an NE employee. The manager for the Idaho Operations Office prepares the EM site manager’s appraisal, with input from EM’s COO, and the second level of the review of the appraisal is done by NE.

EM also has several smaller sites, some of which are EM-owned and others that are owned by other DOE offices. The EM federal project directors (FPDs) for those sites report to the director of EM’s Office of Site Support and Small Projects. A subset of the non EM-owned sites is those owned by the National Nuclear Security Administration (NNSA), which include sites such as the Los Alamos National Laboratory, the Lawrence Livermore National Laboratory, the Sandia National Laboratory, and the Nevada Site Office. Because of the legislation that created NNSA, no one other than an NNSA official may direct an NNSA employee, contractor, or any operation at an NNSA site. For any given year, EM tells NNSA what work it wants to accomplish and NNSA gives EM an estimate of what it will cost to do the work, including its share of administrative costs. EM submits the budget request. Once it receives the appropriation, EM turns those funds over to NNSA. The staff include both NNSA and EM staff, and the contractors are hired by NNSA. EM receives reports on the status of the work at these sites, but is not responsible for directly overseeing the work.

III. THE OFFICE OF SITE SUPPORT AND SMALL PROJECTS⁵

The Office of Site Support and Small Projects has two primary focuses. First, the director provides coordination and oversight to all EM cleanup and closure activities at NNSA sites. The director also supervises the 19 EM staff at all of the other small, non-NNSA sites where EM cleanup is taking place, including such sites as Moab, the Brookhaven National Laboratory, the Energy Technology Engineering Center, the Stanford Linear Accelerator Center, Lawrence Berkeley National Laboratory, West Valley, and the Separations Process Research Unit.

The director also supervises 12 site liaisons for the small and large sites across the complex. Five of the site liaisons are GS-15s (or equivalent) and seven are GS-14s. The job titles of the

⁴ During the course of this study, the role of the EMCBC has been expanded beyond servicing just EM’s small sites.

⁵ Plans underway to reorganize the COO’s office will split this office into two office—the Office of Small Site Projects and the Office of Site Support.

liaisons include Physical Scientist, General Engineer, Security Specialist, Health Physicist, Environmental Protection Specialist, Program Analyst (Performance Assessment), and Management Analyst. The site liaison position was designed to enhance the interface between EM headquarters and the field sites and, according to EM officials, the liaisons were to serve as staff to the COO. However, EM has struggled to define the site liaisons' role and how the liaisons are to operate within the organization. Exacerbating the problem is that the liaisons are located in Germantown, MD and not at the Forrestal Building in DC where most of the EM headquarters management and staff and DOE officials with whom the liaisons are to interface reside. This has diminished the liaisons' usefulness for providing staff support to the COO. Although phone and e-mail contact can be used effectively in many cases, senior leadership within the COO's office believe that the ability to walk down the hall and meet face-to-face with managers in the other headquarters offices is critical to resolving issues in a timely fashion. When an issue arises in the afternoon, the leadership in the COO's office will generally work late to resolve it rather than assign it to a site liaison who cannot arrive in DC until mid-morning the next day. The unintended results are sub-optimized delegation of authority and underutilization of these site liaison personnel.

On December 22, 2006, the COO issued a memorandum to help clarify the site liaisons' role. According to the memo, site liaisons are to 1) act as headquarters advocates for their sites; 2) provide a bridge between the field and headquarters to enhance communication and address critical business matters; and 3) to be a problem solver and to bring program/project issues to the attention of EM's senior management. However, their primary function is to expedite actions the field needs from EM headquarters offices, i.e., they serve as action officers for critical decisions, congressional inquiries, Freedom of Information inquiries, etc.; helping the sites work issues and walk decision packages, etc. through headquarters. One site liaison reported that a continuing problem with their role is that the field does not yet fully understand it or how the liaisons can help the field. As a result, some liaisons do not believe that they are well utilized, and some actively seek out other work to perform.

Academy staff asked EM headquarters officials and field managers at the sites visited about their interactions with the site liaisons and their assessment of the liaisons' role.⁶ Although virtually everyone believes that the expeditor role the liaisons play is helpful, staff at many sites report that the liaisons generally lack the in-depth knowledge of site operations that is needed to help work issues through headquarters. An ORP staff member spoke for many across the complex by saying, "There is not a problem out here; it is a myriad of problems out here. You have to be out here working day-to-day at the site for a year to understand the problems." The site liaisons have little or no field experience.⁷ In addition, many field staff do not believe that the liaisons have the organizational stature to effectively address issues of any significance, such as a baseline changes or contract modifications. To work those issues through headquarters, field managers travel to DC.

⁶ Academy staff visited all large site offices at which there is a significant EM mission; Moab, a small EM-owned site; the Los Alamos National Laboratory and the Nevada Site Office, which are small NNSA-owned sites; Brookhaven National Laboratory, which is a small Science-owned site; and Fernald, a small EM-owned that that was near closure.

⁷ By way of contrast, the COO, Deputy COO, and the Director of the Office of Site Support and Small Projects all have extensive field experience.

IV. ORGANIZATIONAL PRECEPTS

To better inform its consideration of the issues, the Panel asked Assistant Secretary Rispoli to provide guidance in terms of his main strategies, goals, and principles against which the Panel could perform its analysis. The Assistant Secretary provided the following list of his precepts for the organization:

1. Develop and sustain expertise in project management.
2. Manage each project as an entity—beginning to end.
 - a. Many projects will transcend the current contract.
 - b. Some contracts encompass several projects.
3. Integrate project management and contract management.
 - a. The contract is the “vehicle.”
 - b. Carefully structure the contract to incentivize performance.
4. Safety is paramount:
 - a. occupational
 - b. radiological
 - c. facilities design
5. Technical challenges require a core of expertise in engineering and technology available to deploy complex wide, and for a lessons learned loop.
6. Field sites are staffed to sustain steady-state workload.
 - a. Augment expertise as needed by detail or outsourcing.
 - b. Utilize a central core of engineering and technology, contracting, etc.
7. Centralize functions that would be spike workloads at individual sites, but can be scheduled, managed, and resourced centrally.
 - a. big, complex procurements
 - b. etc.
8. Now that EM’s mission and functions as the cleanup agent for the Department have been declared open-ended, develop an enduring organizational structure and optimum workforce that positions EM for now and the future.
9. Improve the business end of EM:
 - a. financial management
 - b. career development
 - c. contracting
 - d. etc.
10. Maintain strong, collaborative working relationships with Department of Energy organizations and offices outside of EM, with whom we work to develop our plans and programs, to execute our work, and to communicate with outside stakeholders and other interested parties.

11. Recognize that everything done by the Environmental Management organization is of significance to the public in its broadest definition. Therefore, in our planning and execution, we must consider:
 - a. the on-site workers
 - b. the on-site population
 - c. the communities in which we operate and transport
 - d. the states, honoring their regulatory responsibility by maintaining an open, honest, and credible relationship
 - e. the Native American nations, their reservations, and pueblos, respecting their cultural and traditional concerns and maintaining an open, honest, and credible relationship
 - f. other federal governmental entities such as the Environmental Protection Agency, other executive branch departments, the Nuclear Regulatory Commission, the Defense Nuclear Facilities Safety Board, recognizing that each of them has a valid, defined role related to our organization's planning and operations
12. Recognize and respect the Congress of the United States, in their roles as:
 - a. representatives of the communities and states in which we operate, to whom we must be responsive and accurate in our communication of issues and replies to their inquiries
 - b. authorizers and appropriators for the work EM does for the good of the nation, the states, and communities, to whom we must present our plans and budgets, and account for our performance against those plans and budgets
13. In all we do as an organization within the Department of Energy, we must support and be responsive to the President and the Secretary of Energy, who promulgate national and Departmental priorities related to the mission of our organization and the way we plan and execute that mission throughout the complex.

V. ADDITIONAL ORGANIZATIONAL CHANGES⁸

Adding a Management Analysis Capability

At the Panel's urging, EM established an Office of Management Analysis and Process Management. The functions of the office are to:

- conduct analysis of management issues
- develop recommendations for organizational restructuring/realignments
- examine organizational roles/responsibilities/authorities/accountability
- facilitate, coordinate, and track management initiatives, such as the implementation of Academy, Environmental Management Advisory Board, Government Accountability Office, and Inspector General recommendations

⁸ The reorganization of the Office of Human Capital and Business Services was discussed fully in the report.

- benchmark other organizations to identify better ways to conduct business
- develop management systems, such as a system to estimate workload and resource requirements, and provide technical assistance to offices as they implement those systems
- map out/flowchart programmatic and administrative work processes and develop recommendations for streamlining those processes
- help offices develop standard operating procedures
- review draft policies and ensure that they are appropriately coordinated and disseminated throughout the organization
- analyze policy to identify gaps and the need for updates based on new legislation, regulations, DOE Orders, etc.
- manage a policy directive system

Communications

Various individuals, both within and outside of the Department, are engaged in communications with EM stakeholders, however, these resources are fragmented across the EM/DOE organization. In response to a recommendation made to EM by the Environmental Management Advisory Board, EM plans to establish an Office of Communications and External Affairs that will report to the Office of the Assistant Secretary. The new office's responsibilities include:

- developing corporate messages, communication techniques, and strategies and disseminating them throughout EM, both headquarters and the field
- preparing congressional testimony
- preparing pre-hearing questions and answers and answers to post-hearing questions
- preparing communication documents, pamphlets, etc.
- preparing press releases and associated background materials
- preparing monthly, quarterly, and annual EM reports
- preparing speeches for the Assistant Secretary and PDAS, and consulting on all other speeches to ensure consistency of message
- developing and coordinating trips for the Assistant Secretary and PDAS, particularly with respect to the objective, theme, and message to be delivered

The office will be composed of political appointees (2 or 3) and career employees (3 or 4). EM believes that this office will make it easier to ensure that EM's message is clear, timely, and consistent. It combines the savvy and experience of political appointees⁹ with the knowledge and depth of the career staff in headquarters and the field.

⁹ EM's recently appointed senior communications advisor is a political appointee.

Realigning the Office of Program Integration¹⁰

The Panel noted that the work actually being performed by the Office of Program Integration appeared to be highly operational in nature. The office's primary work involves getting non-waste material, such as spent nuclear fuel, to the disposition stage.¹¹ The Panel observed that because of the co-existence of non-waste and waste materials, there often were times where the work performed by the Office of Program Integration overlapped with the Office of Disposal Operations, which reports to the DAS for Regulatory Compliance, and created some inefficiencies. At the Academy Panel's July 2007 meeting, Assistant Secretary Rispoli informed the Panel that EM plans to move the Office of Program Integration under the DAS for Regulatory Compliance.

VI. THE OFFICE OF PROJECT RECOVERY

Pursuant to problems with the Waste Treatment and Immobilization Plant (WTP) project, which is managed by EM's Office of River Protection (ORP), Assistant Secretary Rispoli created the Office of Project Recovery, which reports to the Assistant Secretary and the PDAS. The Assistant Secretary assigns projects to this office when there is concern for the project's performance. For projects in its portfolio, the Office of Project Recovery is to "assess the current conditions; stabilize the situation; establish a path forward for the project; work with the field office to develop actions and an implementation plan; serve as the headquarters advocate and oversight for the project; and serve as primary liaison with Congressional staff for the project...."¹² Since its creation, the Office of Project of Recovery has focused exclusively on the WTP.

By all accounts, the Office of Project Recovery has been instrumental in helping ORP resolve problems and finding a path forward for the troubled WTP project. The director and five staff (including three General Schedule (GS) 15s and one GS-14, three of whom are senior engineers) have worked with the WTP FPD and his staff to address the technical, financial, contractual, and project management issues that plagued that project. However, there are no formal procedures for how the Office of Project Recovery interacts with the projects it assists or a defined set of roles and responsibilities for each. There also are no criteria for when a project no longer needs its assistance.

On paper, the Office of Project Recovery has no line authority over WTP. However, interviews with EM headquarters officials and EM and non-EM officials at the Hanford Site revealed that the director of the Office of Project Recovery has assumed a site manager persona for the project. Although the WTP FPD reports to the ORP site manager, the latter often is not part of the decision-making process. The WTP project director works one-on-one with the director of the Office of Project Recovery developing strategies and seeking advice, and the latter has taken the lead to work many project issues through EM headquarters and beyond, often without the

¹⁰ This office is being renamed the Office of Nuclear Materials and Disposition to better reflect its organizational functions.

¹¹ This involves developing disposition maps for the material.

¹² Memorandum from Assistant Secretary Rispoli dated October 24, 2005.

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involvement of the ORP site manager at key decision-making junctures. Interviews with site contractors also identified some possible overlap between the role of the Office of Project Recovery and the designated contracting officer representatives. Even at the headquarters level, decisionmaking within the chain of command is affected. According to one senior official, the COO's office makes decisions on WTP dealing with quality assurance, nuclear safety, and human capital, and the director of the Office of Project Recovery makes programmatic decisions. They usually collaborate on determining the technologies that will be used.

ACQUISITION

I. OVERVIEW OF ENVIRONMENTAL MANAGEMENT ACQUISITION

As indicated in Table 1 below, EM obligations under facilities management contracts and other contract actions account for 98.5 percent of the EM total. In fiscal year (FY) 2006, only 1.5 percent of EM obligations were awarded under grants and cooperative agreements.

Table 1: EM Obligations for FY 2006¹³

TYPE OF TRANSACTION	Obligations (\$000)	% of Total
Facilities Management Contracts	\$5,589.5	79.1
Other Contract Actions (Including Inter-Agency Agreements)	1,370.8	19.4
Grants and Cooperative Agreements	109.8	1.5
Totals	\$7,070.10	100

Where Acquisition Activities are Performed

EM Headquarters Procurements

EM headquarters generates a relatively small amount of acquisition activity. Most of the headquarters activity is comprised of service contracts that provide programmatic and administrative support, such as:

- data collection, reporting, and analysis
- information technology server, database, and web content services
- mailroom and other logistical services

The EM Office of Business Services has a staff of four GS-1102 contract specialists who help prepare procurement requests and assist with other aspects of the acquisition process for headquarters customers. However, EM headquarters does not have the authority to award its contracts. The Office of Business Services forwards all contract actions that support EM headquarters to DOE's Office of Headquarters Procurement Services, an office within the Office of Procurement and Assistance Management (OPAM), for actual award.

¹³ Data supplied by EM's Office of Procurement Planning.

EM Field Acquisitions

Field contracts deal with work that is complex and requires constant attention to concerns of safety for workers, the public, and the environment. Contractors face many uncertainties with respect to the knowledge of the types of contaminants, their extent, and concentrations, which can produce delays and changes in direction, and suitable cleanup technologies do not always exist. Technological developments, which could help reduce risk, lower cost, and accelerate cleanup, are, by their very nature, impossible to predict. Some contracts involve construction of new facilities. In addition, the work involves forging agreements and successful working relationships with federal and state regulatory authorities, local stakeholders, and Native American Tribes.

The preponderance of contract placement and administration activities associated with EM's cleanup and closure activities is performed by contracting staff located at EM's field sites and other DOE operations offices, as shown in Table 2 below.¹⁴

Table 2: EM Facility Management Contract Obligations by Procurement Office for FY 2006¹⁵

Awarding Office	Obligations (in millions)
Albuquerque	\$47.2
Idaho	544.1
Nevada	14.5
Ohio (includes EMCBC)	781.6
Oak Ridge	502.3
Rocky Flats	468.1
Richland	837.4
River Protection	802.3
Savannah River	1,551.4
Carlsbad Field Office	140.6
Total	\$5,689.5

Although contracts are awarded and administered at DOE and EM offices throughout the country, EM and DOE headquarters are substantially involved in EM's contracting actions. EM headquarters frequently plays a direct role in the source selection process for major EM procurements. Often, an EM headquarters official is appointed as the Source Selection Official, and other headquarters personnel are voting members of Source Evaluation Boards (SEBs).

¹⁴ As indicated later, however, OPAM must concur prior to the actual contract placement if the procurement exceeds the dollar threshold that has been delegated to the awarding office.

¹⁵ Data supplied by EM's Office of Acquisition Management.

II. DOE ACQUISITION PLANNING REQUIREMENTS

An important prerequisite to DOE's acquisition planning process is the requirement to develop a Site Utilization Management Plan (SUMP) that brings together in one document the long-term (5-10 years) objectives of the site and the business strategy for accomplishing them. The SUMP should reconcile the views and objectives of all DOE programs operating at the site and the roles they will play to meet the site's overall business objectives. The SUMP should include:

1. a discussion of the site's responsibilities under the DOE Strategic Plan
2. the identity of the DOE Program Office(s) supported and a detailed description of the activities involved and their intended objectives, including:
 - a. a projection of business line activities, e.g., new and developing missions or significant changes to the current mission, including any reduction or expansion
 - b. the interrelationships among various business line activities, including the identification of their relative significance and reconciliation of competing mission objectives and any other open issues
 - c. any internal or external events that may affect site operations
 - d. any local area considerations
 - e. for a single program site, a discussion that connects budget, acquisition, and mission-related performance data
3. the current and planned budget necessary to accomplish each of the performance objectives of all site-contained programs (to include contingency plans to deal with the effects of reduced appropriations)
4. a discussion of the management approach to be employed to control changes to the work as planned and the assignment of unexpected work
5. a discussion of available infrastructure at the site to support each program, assuming full integration of site program, planning, management, and assessment
6. a discussion of the current "contractual configuration" and future plans for meeting departmental responsibilities, including any potential "privatization" of site functions
7. all proposed acquisitions and their effects, i.e., those procurements continuing as initially planned and any new procurements added to meet the site's mission¹⁶

All subsequent acquisition planning must be consistent with the approved SUMP, which should be revised whenever a site's mission changes.¹⁷

¹⁶ DOE Acquisition Letter 2006-11, Site Utilization and Management Planning, 9/27/06.

¹⁷ See <http://www.wv.doe.gov/pdf/Draft%20WVDP%20Sump%20Final.pdf> to view the SUMP prepared for the West Valley Demonstration Project.

Written acquisition plans are required for all acquisitions where the total estimated contract cost is \$5 million and above, with the exception of:

- architect-engineering services
- broad agency announcements or unsolicited proposals
- basic research from non-profit organizations
- competitive procurements of commercial items
- interagency agreements

DOE acquisition planning requirements are detailed in Chapter 7.1 of the *DOE Acquisition Guide*. The guidance integrates all Federal Acquisition Regulation requirements with specific DOE concerns, e.g., acquisition strategies required by DOE Manual 413.3.-1. Acquisition plans are subject to review by OPAM and the General Counsel as part of DOE's business clearance process.

III. RESULTS OF BENCHMARKING WITH THE NAVAL FACILITIES ENGINEERING COMMAND

In an effort to understand how other major federal acquisition operations with mission components similar to EM's approach their responsibilities, Academy staff met with the Naval Facilities Engineering Command (NAVFAC), which provides engineering and maintenance support as well as construction services for all Navy and Marine Corps facilities and public works centers. It also provides some support to Air Force facilities. There are three major NAVFAC commands—NAVFAC headquarters in Washington, DC, NAVFAC Atlantic, and NAVFAC Pacific—as well as three specialty centers: the Engineering Services Center, the Expeditionary Logistics Center, and the Navy Crane Center. NAVFAC has a worldwide staff of approximately 17,000 employees and receives funding of roughly \$12 billion per year. It employs approximately 830 contracting officers (1102 series). Eighty-five to 90 percent of NAVFAC's work is done by contract.

NAVFAC Atlantic Command Acquisition Operations

Approximately two-thirds of NAVFAC's workload is handled through the Norfolk-based NAVFAC Atlantic Command and its seven subsidiary facilities engineering commands (FECs). On a yearly basis, each command develops an acquisition strategy that includes needs, goals, and contracting activities to be conducted over the next 12 months. This strategy is jointly prepared and signed by the line of business manager at the site (comparable to an EM site manager) and the senior contracting official. It thus represents both a business plan as well as an acquisition plan—an integrated product. The plan is sent to the Atlantic command for review.¹⁸

The FEC site commanders and senior acquisition officials have warrants with unlimited contracting authority. Procurements below a \$30 million threshold are both developed and

¹⁸ See <http://acq.navfac.navy.mil/pdffiles/plan.pdf> for a description of the plan.

executed at the site, with no higher level of review. However, procurements over \$30 million are reviewed by the acquisition office of the NAVFAC Atlantic command, and if the procurement exceeds \$100 million, it also is reviewed by the head acquisition official at NAVFAC headquarters. There is a standard 5-day review time, therefore, the expected turnaround time for business clearance for a \$100 million procurement is a total of 10 days; 5 days at NAVFAC Atlantic and 5 days at NAVFAC headquarters. However, if a procurement is particularly complicated, the offices may review the procurement concurrently so each would have 10 days. The reviews of the large procurements help ensure that the appropriate processes have been followed to develop the request for proposal (RFP) and that small business considerations have been taken into account. All aspects of the RFP are reviewed, including the source selection plan and the composition of the SEB.

It should be noted that each NAVFAC organization has all acquisition-related functions on site, i.e., NAVFAC headquarters, NAVFAC Atlantic, and its FECs have the required contracting, technical, and legal expertise to execute major procurements. The advantage of these distributed resources is that everyone who needs to be involved with these major procurements is privy to the issues of the process on a concurrent basis. If the field has a legal concern, it is likely that counsel has been engaged at all levels prior to the acquisition arriving at headquarters for a final review. NAVFAC officials believe this staffing structure results in better communications and more expeditious processing.

Procurement Procedures

NAVFAC uses a Business Management System to document procurement processes for everyone to follow. It also has been developing a series of templates to guide staff on developing solicitations. Each FEC has a core group of staff experienced in developing solicitations. The team has access to subject matter experts who help them with the work. NAVFAC has found that this approach eliminates the need to reinvent the wheel for every new procurement.

For site procurements, the source selection authority is the Commanding Officer, his Executive Officer or the head of contracting. The command's general counsel signs off on all procurements that must go forward for review.

Many NAVFAC contracts are indefinite delivery, indefinite quantity. Thus, while the initial contract may go through the higher-level review process, tasks will be executed exclusively in the field. For special, high-visibility, high-value procurements, the field establishes a separate office to conduct the procurement, perform the contract administration function, and execute the actual operations. This was the case, for example, for the office handling contracting issues and reconstruction associated with Hurricane Katrina.

Procurement Reviews

On a yearly basis, each command conducts an Internal Business Assessment, sampling approximately 10 percent of its contracts to self-assess its operations. The command is expected to take corrective action based on its self-assessment. To ensure that staff follow good acquisition practices, NAVFAC has developed a Procurement Management Assessment Program (PMAP) where the next senior command has an assessment team review the activities of its

subordinate commands. For example, NAVFAC Atlantic reviews the procurement operations of its FECs, and NAVFAC headquarters reviews NAVFAC Atlantic's operations. PMAPs are scheduled so that each site is reviewed once every three years. In addition to examining procurement practices, the team also is checking for consistency across the entire command. The external assessment team reviews the site's self-assessments as part of its review process.

IV. HEAD OF CONTRACTING ACTIVITY DELEGATION

As requested by EM, DOE's Procurement Executive has designated the DAS for Acquisition and Project Management as the sole Head of Contracting Activity (HCA) for EM. This approach is consistent with HCA implementation at other civilian agencies. Table 3 below shows (for eight agencies) the Procurement Executive, HCAs, and who issues and receives contracting officer warrants.

Table 3: Civilian Agency Examples of Delegations of Contracting Authority

Agency	Senior Procurement Executive (PE)	Head(s) of Contracting Activity	Contracting Officer Warrants issued by/to:
Commerce	Director for Acquisition Management	<ul style="list-style-type: none"> • Chief Financial Officer/Assistant Secretary for Administration • Bureau of Economic Analysis* • Bureau of Industry and Security* • Census • Economic Development Administration* • Economics and Assistance Administration* • International Trade Administration* • Minority Business Development Agency* • National Institute of Standards and Technology • National Oceanic and Atmospheric Administration • National Telecommunications and Information Service* • Patent and Trademark Office <p>*Not authorized to operate contracting offices, but may perform Federal Acquisition Regulation functions to be performed by HCA.</p>	<ul style="list-style-type: none"> • PE to Senior Bureau Procurement Official (BPO) within each HCA with contracting offices • BPOs to contracting officers designated to head the contracting offices within each operating unit

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Agency	Senior Procurement Executive (PE)	Head(s) of Contracting Activity	Contracting Officer Warrants issued by/to:
Education	Director of Contracts and Acquisition Management within the Office of the Chief Financial Officer, Office of Management	Director of Contracts and Acquisition Management	<ul style="list-style-type: none"> • PE to Contracts and Acquisition Management staff • PE to Office of Federal Student Aid Acquisitions Group
Environmental Protection Agency	Director, Office of Acquisition Management	Director, Office of Acquisition Management	<ul style="list-style-type: none"> • PE to staff of cognizant Office of Acquisition Management procurement division: <ul style="list-style-type: none"> ▪ Headquarters Procurement Operations Division ▪ Superfund/RCRA* Procurement Operations Division ▪ Research Triangle Park Procurement Operations Division ▪ Cincinnati Procurement Operations Division <p>*RCRA is the Resource Conservation and Recovery Act.</p>
Housing and Urban Development (HUD)	Director, Office of the Chief Procurement Officer reporting to the Deputy Secretary	<ul style="list-style-type: none"> • Chief Procurement Officer, for HUD Headquarters procurements. The Chief Procurement Officer may delegate this authority to the Deputy Chief Procurement Officer. • The Directors, Field Contracting Operations for procurements on behalf of their field-based requiring activities. 	<ul style="list-style-type: none"> • HCAs to their respective contracting staffs

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Agency	Senior Procurement Executive (PE)	Head(s) of Contracting Activity	Contracting Officer Warrants issued by/to:
National Aeronautics and Space Administration (NASA)	Assistant Administrator for Procurement, reporting to Director of Institutions and Management Support Office	<ul style="list-style-type: none"> • For NASA Headquarters, the Director for Headquarters Operations • For Space Operations Mission Directorate (SOMD) contracts, the HCA is the Associate Administrator for SOMD in lieu of the field Center Director(s) • For Exploration Systems Mission Directorate (ESMD) contracts, the HCA is the Associate Administrator for ESMD in lieu of the field Center Director(s) • For NASA Shared Services Center (NSSC) contracts, the HCA is the Executive Director of the NSSC in lieu of the field Center Director(s) • Directors of : Ames Research Center, Dryden Flight Research Center, Glenn Research Center at Lewis Field, Goddard Space Flight Center, Johnson Space Center, Kennedy Space Center, Langley Research Center, Marshall Space Flight Center and Stennis Space Center 	<ul style="list-style-type: none"> • HCAs to their respective contracting staffs
State	Director, Office of the Procurement Executive, reporting to the Assistant Secretary for Administration	<ul style="list-style-type: none"> • Office of Acquisitions • Regional Procurement Support Offices in Florida and Frankfurt 	<ul style="list-style-type: none"> • PE to contracting staff within HCAs

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Agency	Senior Procurement Executive (PE)	Head(s) of Contracting Activity	Contracting Officer Warrants issued by/to:
Treasury	Director, Office of the Procurement Executive, reporting to the Assistant Secretary for Management and Chief Financial Officer (ASM/CFO)	<ul style="list-style-type: none"> • Deputy Assistant Secretary for Administration for Departmental Offices • Head of each Bureau 	<ul style="list-style-type: none"> • HCAs to their respective contracting staffs
Veterans Affairs	Assistant Secretary for Management	<ul style="list-style-type: none"> • Director, Acquisition Management Service, Central Office • Deputy Assistant Secretary for Facilities, Central Office • Director, Building and Supply Service, Central Office • Director, Publications Service, Central Office • Director, Monument Service, Central Office • Director, Vocational Rehabilitation and Education Service, Central Office • Director, Loan Guaranty Service, Central Office • Director, Marketing Center • Chief, Acquisition and Materiel Management Service at a field facility • Director, Regional Office 	<ul style="list-style-type: none"> • Deputy Assistant Secretary of Acquisition and Materiel Management for all contracting officers at Senior and Intermediate levels • HCAs for contracting officers at the Basic Level within their organizations

In most of the agencies, the HCAs are the heads of contracting organizations. In all the agencies, contracting officer warrants are issued only to contracting personnel. EM's proposed HCA implementation plan provides that the contracting offices remain under the supervision of the site managers. There is nothing that inhibits the site managers from meeting with contractors or leading his/her team to define the direction and decisions that should be communicated to the contractor. Formal communications that pertain to contractor direction or remedies under the contract are handled by the contracting officer's representative, contracting officer, or other official delegated responsibility under the specific contract. However, this should be the case irrespective of who has HCA authority.

V. DOE HEADQUARTERS BUSINESS CLEARANCE PROCESS

Although each DOE HCA is provided unlimited acquisition authority, all acquisitions are subject to a dollar threshold for applying DOE headquarters' business clearance process, which is the primary means by which DOE headquarters oversees acquisition activities throughout the Department. It also is the main method EM headquarters uses to review a sampling of the transactions executed by its sites. Either prior to or concurrent with DOE headquarters review, EM's Acquisition and Project Management Office reviews the transactions that are selected to undergo DOE headquarters' review. For EM, any competitive acquisition over \$15 million may be selected to go through the business clearance process as described below.¹⁹

Prior to the beginning of each fiscal year, the Office of Contract Management (OCM) issues a request for each contracting activity to provide a projection for the upcoming fiscal year of known or contemplated contract and financial assistance actions exceeding delegated thresholds, and other appropriate actions expected for that year. Based on the contracting activity's submission, the OCM will identify specific actions to be submitted to the OCM for Headquarters Business Clearance review and approval. If an action is selected for Headquarters Business Clearance review and approval, the OCM, will notify the Procurement Director at which point(s) in the acquisition cycle the action must be submitted for Headquarters Business Clearance review and approval. The OCM may, under certain circumstances, select an action for "limited" review, e.g., review of the solicitation only as opposed to review of both the solicitation and the subsequent award documents. Actions not selected for Headquarters Business Clearance review and approval are deemed to have received a waiver from such review.

Contracting activities are also expected to report to the OCM any action that may arise during the course of the fiscal year which exceeds the local delegation thresholds and that has not been submitted in the annual projected actions. The OCM will review each action on a case-by-case basis to determine if the action should be submitted for Headquarters Business Clearance review and approval. Accordingly, contracting officers should ensure that adequate lead time exists in the acquisition schedule to permit Headquarters Business Clearance review and approval to occur. Poor acquisition planning is not an acceptable basis for a waiver.²⁰

The number of DOE actions that were selected for business clearance during FY 2006 are summarized in Table 4. New awards are comprised of new contracts, task orders, grants, or cooperative agreements. Other items consist mainly of modifications and major subcontract awards. As indicated in the table, of the total number of actions OPAM reviewed, 25 percent of the new awards and 48 percent of the other actions were selected from EM sites. These data do not include other EM actions that may have been selected from Idaho and Oak Ridge.

¹⁹ In May 2007, OPAM increased the threshold for its business process review for the Richland Operations Office and Savannah River from \$5 million to \$15 million for competitive transactions, \$25 million for subcontracts, and \$10 million for other contracts and grants/cooperative agreements. In November 2007, the DAS for Acquisition and Project Management was designated EM's HCA and received the same thresholds.

²⁰ DOE Acquisition Guide, Chapter 71.1 (August 2006)

Table 4: FY 2006 EM Actions Selected for DOE Business Clearance Review²¹

HCA	New Award	Other
EM HCAs		
Richland/Office of River Protection	4	6
Savannah River	3	3
EMCBC	7	2
EM Totals	14	11
Other DOE HCAs		
Headquarters	6	0
Chicago	5	3
Golden	4	0
Idaho	4	3
Oak Ridge	4	5
National Energy Technology Laboratory	5	0
Office of Civilian Radioactive Waste Management	2	1
Strategic Petroleum Reserve Project Mgt. Office	1	0
Southeastern Power Administration*	0	0
Southwestern Power Administration	0	0
Western Area Power Administration	1	0
Other DOE Totals	32	12
All DOE Totals	56	23

*No actions were identified by the Administration.

Although the dollar value of the selected actions was not included in the data provided, it is clear from their descriptions that most of the EM actions were major, high-dollar-value procurements or modifications.

These reviews are not the only ones that OPAM performed. For example, last year's memorandum to DOE procurement directors that forwarded the results of OPAM's selection process contained the following language:

Those procurement and financial assistance actions submitted in your response to our August 11, 2005 memorandum, but not identified in the attached Plan, are waived from Headquarters business clearance review for FY 2006. This waiver applies only to those actions which were identified in your response to us; it does not apply to any action not documented in your response.

Accordingly, any previously unidentified action, as soon as its existence is realized, and to the extent it meets the criteria for Headquarters business clearance review, must be submitted to this office for review. It is very important that your office notify us at the earliest possible time of actions that meet Headquarters clearance review requirements. Your lead times should take into consideration the need for Headquarters clearance review because we will not waive a review because of poor program/procurement planning.²²

²¹ Data supplied by OPAM.

²² Memorandum for Procurement Directors, from the Director of Acquisition, Planning and Liaison Division, Office of Contract Management, Office of Procurement and Assistance Management, December 8, 2005.

The memorandum also identified other actions not specifically identified in DOE offices' acquisition plan summaries that had to be submitted for headquarters business clearance review, including:

- actions selected for headquarters review in the prior year's call, but not yet submitted to or approved by OPAM
- all extensions and new awards of management and operating contracts and site and facility management contracts
- all task orders or delivery orders above the site's delegated procurement authority issued against a General Services Administration schedule contract, another agency's government-wide acquisition contract; or another agency's multiple award contract

These requirements extended the business clearance requirements well beyond those identified in EM's annual acquisition plan and could have major implications for those transactions that were not originally included on the list. For example, under EM's current delegation, a \$10,000,000 contract modification that was necessitated by new regulatory requirements imposed after OPAM's selection of actions to review would require submission for headquarters' business clearance review.

The time involved in the business clearance process can be substantial for procurements and contract administration as well. Data collected by EM in May 2007 for recent major procurements are contained in Table 5 below.

Table 5: Business Clearance Timelines for Recent EM Actions

#/Action Type	Average Time from Submission to Approval	Range from Submission to Approval
6 Acquisition Plans	15 weeks	12-20 weeks
5 Draft Solicitations	8 weeks	6-11 weeks
3 Final Solicitations	11 weeks	5-22 weeks
5 Requests for Equitable Adjustment	2.5 weeks	1-3.5 weeks
1 Pending Request for Equitable Adjustment--Received 9 weeks ago		

VI. ACQUISITION SUPPORT AT DOE SITES

Academy staff visited 10 DOE sites that provide acquisition support to the EM program. A description of each follows.²³

Acquisition Support at EM-Owned Sites

EMCBC's Office of Contracting acquires, manages, and directs the acquisition of supplies and services required to support the EMCBC staff and its customers (closure and small sites). Services provided include the award and administration of contracts, grants, and cooperative agreements; contracting policies and administrative support; and administration of the contractor human resources management activities. In addition to having staff with contract pricing expertise, the Office of Contracting has immediate access to other EMCBC offices that support the acquisition function, e.g., legal services and financial management. The office is managed by a GS-1102 who reports to the director of the EMCBC. The office has a total of 28 staff.

The Office of Contracts Management at the Savannah River Operations Office awards and administers contracts, grants, and cooperative agreements that support the Savannah River Site, including the management and operating contract for the site, which includes the operation of the Savannah River National Laboratory; a design and construction contract for the salt waste processing facility; and a site security services contract. The office also administers an agreement with the University of Georgia, which operates the Savannah River Ecology Laboratory. EM and NNSA are the primary DOE mission components at the site. Major site mission objectives are accelerated environmental cleanup; supporting the nuclear weapons stockpile; and processing and storing materials in support of the U.S. nuclear non-proliferation efforts. The office has no policy or cost/price analysis support. A GS-1102 who reports to the manager of the Savannah River Operations Office manages the Office of Contracts Management. The total number of staff at the time of the Academy staff's visit was 15.

Contracting staff in the Carlsbad Field Office's (CBFO) Office of Business award and administer contracts, grants, and cooperative agreements that support CBFO's operations. CBFO's major mission is managing DOE's National Transuranic Program, which includes the treatment, storage, transportation, and ultimate disposal of the waste at the Waste Isolation Pilot Plant (WIPP). Major contracts under administration include the management and operating contract that supports the CBFO and the WIPP facility, and the transportation contracts for waste shipments. At the time of the Academy staff's visit, there were three contracting staff—two GS-1102s and one administrative assistant—who report to the director of the Office of Business. The director, who also is responsible for budget, human resources, information technology, and public affairs, reports to the manager of the CBFO.

Acquisition at the Richland Operations Office is the responsibility of the Procurement Division, which reports to the Assistant Manager for Administration. Major contracts under administration include a management and integration contract with Fluor Hanford for site cleanup/management activities, and a contract with Washington Closure Hanford, LLC to close

²³ Information from Brookhaven is not included.

the Hanford Site River Corridor. The division's staff consists of the director, an assistant, and the Acquisition, Administration, and Support Teams for a staff total of 17. Richland's Office of Chief Counsel provides legal support, and there are two cost/price analysts who are assigned to the Financial Management Division.

Acquisition at the Office of River Protection is the responsibility of the Acquisition Management Division, which reports directly to the site manager. Major contracts under administration are the contract with Bechtel National Inc. for the design and construction of the Waste Treatment and Immobilization Plant, and a contract with CH2M Hill Hanford Group for management of the tank farms. The division staff consists of the director, his program assistant, and operational and support staff (including a cost/price analyst) for a staff total of 12. The site manager recently hired an attorney advisor with acquisition experience, and additional legal support also is available from the Richland Operations Office.

Acquisition at the Portsmouth/Paducah Project Office is the responsibility of a contracting officer and three contract specialists assigned to the Lexington Operations Group. Major contracts under administration include the LATA/Parallax Portsmouth LLC and Paducah Remediation Services LLC for investigation and remediation of specific areas, and the US Enrichment Corporation to maintain the process buildings and enrichment equipment at the Portsmouth plant in cold standby condition to allow for a restart of enrichment operations in the future, if necessary.

Acquisition Support at Non EM-Owned Sites

Acquisition at the Idaho Operations Office (an Office of Nuclear Energy-owned facility) is the responsibility of the Contract Management Division, which reports to the Assistant Manager for Administration Services. Major contracts under administration are with Battelle Energy Alliance for operation of the Idaho National Laboratory, and CH2M Washington Group Idaho for the Idaho Cleanup Project. In addition to acquisition support, the division awards and administers a significant amount of financial assistance (grants and cooperative agreements). There are 21 employees in the division who provide acquisition support to both the Office of Nuclear Energy and EM. This division is comprised of three teams—Procurement Services, Pricing, and Property Management. Legal support is available from the Office of the Chief Counsel.

Acquisition at the Oak Ridge Office, an Office of Science-owned facility is the responsibility of the Procurement and Contracts Division, which reports to the Assistant Manager for Administration. Major contracts under administration are with UT-Battelle for management and operation of the Oak Ridge National Laboratory, Bechtel Jacobs Company for EM closure activities, and BWXT-Y12 for management and operation of the Y-12 Plant. There are 40 employees in the division who provide acquisition support to both the Office of Science and EM. This division is comprised of the Contracts and Property Management Branch, the Environmental Acquisitions Branch (10 employees focusing exclusively on EM work), and the Acquisition Services Branch. Cost and pricing support is available from the Finance Division, and legal support is provided by the Office of Chief Counsel.

Acquisition at the Los Alamos Site Office, an NNSA-owned facility, is the responsibility of staff reporting to the Assistant Manager for Business and Assessment. The major contract under administration is with the Los Alamos National Security LLC to manage and operate the Los Alamos National Laboratory. The contract was awarded in December 2005 and replaced a contract arrangement with the University of California that had existed for over 60 years. There is a total of three contracting staff at the site office. Cost and pricing support is available from the NNSA Service Center in Albuquerque and legal support is provided by the site's Office of Counsel.

Acquisition at the Nevada Site Office, an NNSA-owned facility, is the responsibility of staff assigned to the NNSA Service Center in Albuquerque.

Workload and Operational Staffing

The scope of this study did not permit a detailed workload analysis that would produce an accurate projection of staffing needs at each of the acquisition sites. Table 6 on the following page provides workload²⁴ and staffing data for all the EM-owned sites that Academy staff visited as well as Idaho and Oak Ridge. Los Alamos was not included due to the lack of comparable Procurement and Assistance Data System (PADS) data.²⁵ For all sites, the preponderance of the dollar value under administration is in the contracting area. With the exception of Carlsbad and Idaho, the number of contract instruments under administration exceeds the number of financial assistance instruments.

²⁴ Derived from PADS Online.

²⁵ PADS Online does not include a separate sort category for Los Alamos. Data are included under the NNSA Service Center, but with the exception of the Los Alamos National Laboratory contract and a few other financial assistance instruments, descriptions are not precise enough to determine what site they support.

Table 6: Operational Contracting Staff and Administrative Workload at the Visited Sites

EM Site	No. of Active Financial Assistance Agreements	\$ Value of Financial Assistance under Administration	No. of Active Contracts	\$ Value of Contracts under Administration	No. of Operational Acquisition Personnel*
EM-Owned Sites					
EMCBC	12	\$21,686,200	24	\$8,890,337,646	15
Savannah River	15	\$174,886,869	57	\$16,256,761,664	10
Carlsbad	16	\$337,672,565	4	\$1,478,660,713	3
Richland	11	\$58,106,038	37	\$11,129,863,282	9
Office of River Protection	0	0	8	\$16,653,947,299	7
Portsmouth/Paducah	1	\$5,268,500	6	\$1,033,069,890	4
TOTAL: EM-Owned Sites	55	\$597,620,172	136	\$55,442,640,494	48
Non EM-Owned Sites					
Idaho	258	\$1,371,570,235	25	\$11,866,554,004	10
Oak Ridge	13	\$77,306,071	89	\$60,063,640,364	21
TOTAL: Non EM-Owned Sites	271	\$1,448,876,306	114	\$71,930,194,368	31

*Positions (including vacancies) for contract specialists and team leaders who perform pre-award and post-award responsibilities. Does not include supervisory or other support personnel.

Table 7 on the next page compares the sites by the number and dollar value of total instruments administered by the operational contracting personnel (contract specialists). It should be stressed that these two ratios provide very rough indices of workload burden. Considered alone, each can be misleading unless further analysis is performed. For example, ORP contract specialists administer an average of 1.1 instruments, while Idaho contract specialists administer an average of 28.3 instruments. However, the ORP workload consists of major acquisitions with an average dollar value per specialist of \$2,379,135,328. Idaho has an extremely heavy mix of financial assistance agreements (258 versus 25 contracts), which do not require the same administrative effort as the contract portfolio. The same is true of Carlsbad (20 financial assistance agreements versus 3 contracts).

When both ratios are considered, the Portsmouth/Paducah Project Office (PPPO) appears to be the healthiest of the sites from a staffing perspective. PPPO contract specialists administer an average of 1.8 instruments with an average value of \$259,584,598. However, the bulk of PPPO's workload is comprised of administering complex acquisitions, and the impression from the site visit is that they are "a bit understaffed." Most of the EM site offices are contract administration offices with little capacity to perform major procurement responsibilities.

APPENDIX B

Savannah River specialists average 7.2 instruments with a relatively high average value of \$1,643,161,853 and a workload mix of nearly 80 percent contracts.

Table 7: Operational Contracting Staff Work Ratios at the Visited Sites

EM Site	No. of Active Instruments Administered	\$ Value of Instruments under Administration	No. of Operational Acquisition Personnel	Average No. of Instruments Administered by each Contract Specialist	Average \$ Value of Contracts under Administration by each Contract Specialist
EM-Owned Sites					
EMCBC	36	\$8,912,023,846	15	2.4	\$594,134,923
Savannah River	72	\$16,431,648,533	10	7.2	\$1,643,164,853
Carlsbad	20	\$1,861,336,278	3	6.7	\$605,444,426
Richland	48	\$11,187,969,320	9	5.3	\$1,243,107,702
Office of River Protection	8	\$16,653,947,299	7	1.1	\$2,379,135,328
PPPO	7	\$1,038,338,390	4	1.8	\$259,584,598
TOTAL	191	\$56,085,263,666	48	3.9	\$1,168,442,993
Non EM-Owned Sites					
Idaho	283	\$13,238,124,239	10	28.3	\$1,323,812,424
Oak Ridge	102	\$60,140,946,435	21	4.9	\$2,863,594,592
TOTAL	385	\$73,379,070,674	31	12.4	\$2,367,066,795

Much of the work involves administering major contracts with significant complexities and challenges. Because of this, these ratios should not be used to assess the adequacy of staffing at any specific site.

VII. LESSONS LEARNED FROM ROCKY FLATS

The Rocky Flats project has been described as one of DOE's greatest cleanup achievements. Initially, DOE estimated that the cleanup would take 65 years and cost \$35 billion. However, in 1995, DOE entered into a contract with Kaiser-Hill to complete the cleanup at Rocky Flats by 2010 for approximately \$9 billion using a management and integrating contract, with 85 percent of the fee linked to performance-based measures. The 1995 cleanup contract cost approximately \$3.6 billion through February 2000, when DOE negotiated a second contract with Kaiser-Hill that called for completing the cleanup by December 15, 2006 under a cost plus incentive fee (CPIF) contract, with a target cost of \$3.9 billion and a target fee of \$340 million.

In a February 2001 report, the Government Accountability Office (GAO) indicated that "Kaiser-Hill and DOE are unlikely to meet the December 2006 target closure date," and that "as of

December 2000, Kaiser-Hill estimated that it had only about a 15-percent probability of completing the project by 2006.²⁶ In spite of these projections, however, Kaiser-Hill announced completion of the Rocky Flats Closure Project on October 13, 2005, 14 months early and well under cost—actual contract costs were nearly \$600 million less than the target costs.

Rocky Flats still must execute regulatory²⁷ and contract closeout activities. Even though not officially completed, Rocky Flats has been described as a model for other EM cleanup projects. Therefore, the Panel decided to examine the project to determine whether lessons learned at Rocky Flats have applicability elsewhere in the complex. To determine its applicability as a model, however, it is first necessary to understand the major reasons for Rocky Flats' success.

Success Factors and their Applicability to Other Sites

It is unlikely that all the factors that contributed to the Rocky Flats success story can be replicated at other EM sites. For example, despite bitter community opposition at the inception of the Rocky Flats project, DOE's collaboration with regulators and community stakeholders led to agreement on the level of remediation the site would receive, and Congress' passage of the Rocky Flats National Wildlife Refuge Act of 2001 ended uncertainty about the ultimate site use. Several individuals interviewed during this study indicated that state and local support for prompt closeout of the site was the single most important factor in Rocky Flats' successful closure. Such a clear community consensus for site closure is not found across the complex.

Unlike other sites, Rocky Flats had favorable climatic, geologic, chemical, and structural site characteristics that reduced the scope and complexity of the cleanup effort. Extensive sampling of soil, groundwater, surface water, and air had been performed at Rocky Flats during the late 1980s and early 1990s. These early characterization efforts and other documentation gave DOE a sound basis for characterizing waste and estimating risk, which is critical to successful remediation and cleanup outcomes, and enabled DOE to use an accelerated process for closure.

Rocky Flats also benefited from extremely strong site leadership, solid contractor performance, and a high level of support from EM headquarters and other sites throughout the complex. These factors combined to enable Rocky Flats to define and implement dramatic cost and schedule reductions. GAO and some EM officials question whether it is possible to replicate that level of support for multiple major cleanup and closure sites.

Although wholesale application of the Rocky Flats success factors is unlikely, there appear to be significant opportunities to improve performance at EM sites by applying and/or tailoring lessons learned at Rocky Flats. GAO reported that DOE has gathered and disseminated to other DOE sites numerous lessons learned at Rocky Flats, including the need to:

²⁶ NUCLEAR CLEANUP, *Progress Made at Rocky Flats, but Closure by 2006, Is Unlikely and Costs May Increase*, GAO-01-284, February 2001, pages 20-21.

²⁷ The Comprehensive Environmental Response, Compensation, and Liability Act requires the creation of a record of decision on the sufficiency of the cleanup and any risk imposed by residual contaminants.

- clearly define government oversight of the contractor and limit the number of DOE personnel providing direction
- conduct external reviews of project baselines to build credibility and provide objective recommendations for project improvement
- establish a clear end state vision and risk-based cleanup defined in conjunction with specific future land/site use
- implement new technologies that significantly accelerate the schedule and reduce total costs²⁸

However, GAO also concluded that much more needs to be done to include lessons learned in a database and to track their application at other DOE sites. Subsequently, the Assistant Secretary asked the COO to develop a more robust lessons learned program for EM.

VIII. COST GROWTH AND SCHEDULE SLIPPAGE AT THE WASTE TREATMENT AND IMMOBILIZATION PLANT

The Waste Treatment and Immobilization Plant (WTP) contract with Bechtel National Inc., (BNI) includes the design, construction, and start up of the WTP. The WTP will be an industrial complex of facilities for separating and vitrifying (immobilizing in glass) millions of gallons of radioactive and chemical wastes stored at the Hanford Site. The five major components of the WTP include a pretreatment facility for separating the waste; high-level waste and low-activity waste facilities where the waste will be immobilized in glass; an analytical laboratory for testing the quality of the glass; and the balance of facilities, which will comprise over 20 various support facilities.

In December of 2000, BNI was awarded a CPIF contract with a total project cost of \$4.35 billion to design, construct, and commission the WTP by mid-2011. In April of 2003, with the design about 30 percent complete, BNI revised the project cost estimate to \$5.78 billion with no change in the completion date. Two years later, BNI revised the estimate to \$8.35 billion with a 4-year schedule slippage to mid-2015. As a result of these cost increases and schedule delays, DOE's Office of Engineering and Construction Management engaged Logistics Management Institute (LMI) to review the project.²⁹ In June 2006, BNI proposed a total project cost (without fee or potential incentives) of \$11.553 billion and a completion date of August 2019. That estimate was the subject of an independent validation review conducted by the U.S. Army Corps of Engineers,³⁰ which computed an estimate at completion cost of \$12.203 billion and a schedule completion date of November 2019. On December 22, 2006, the DOE Deputy Secretary approved a baseline change for the WTP to establish a total project cost of \$12.263 billion and a completion date of November 2019.

²⁸ NUCLEAR CLEANUP OF ROCKY FLATS, DOE Can Use Lessons Learned to Improve Oversight of Other Sites' Cleanup Activities, GAO-06-352, July 2006, page 56.

²⁹ Hanford Waste Treatment and Immobilization Plant Project, After Action Fact-Finding Review, Report DE535T1, January 2006.

³⁰ Independent Validation Review of the May 2006 Estimate at Completion for the Hanford Waste Treatment and Immobilization Plant Project, U.S. Army Corps of Engineers, Walla Walla District, August 28, 2006.

Numerous reasons have been advanced for the cost growth and schedule slippage of the WTP project at the Hanford site in Richland, WA. Table 8 below summarizes the major findings of LMI, GAO,³¹ and the Assistant Secretary for EM³² concerning the causes for the WTP's problems.

Table 8: Findings Concerning the Reasons for WTP Problems

Principal Causes Identified by LMI
<ul style="list-style-type: none"> • Faulty initial estimate and the optimistic treatment of uncertainty and risk for: <ul style="list-style-type: none"> ◦ design of novel technology for a large, complex nuclear-chemical plant ◦ quantity, procurement, and availability of physical capital ◦ availability and productivity of qualified (professional and craft) labor ◦ compliance <p>These four factors account for approximately \$2 billion in cost growth.</p> • A flawed acquisition strategy that: <ul style="list-style-type: none"> ◦ resulted in a rush to contract and an unrealistic government fair cost estimate (and subsequent contract price) that has anchored expectations ever since ◦ exempted the contractor from selected DOE administrative requirements, including adherence to DOE project management practices, as prescribed in DOE Order 413.3 and DOE Manual 413.3-1 • The management approach employed by EM and followed by ORP not only bypassed appropriate headquarters staff assistance and oversight, but also precluded prompt and timely consideration of the potentially costly, high-risk issues—particularly the technology design issues BNI raised in early 2001 and the seismic criteria issues the Defense Nuclear Facilities Safety Board raised in 2002—until they eventually and unavoidably came to a head in mid-2004. • Other factors: <ul style="list-style-type: none"> ◦ BNI did not consider the design requirements specified in American Concrete Institute Standard 349 for the concrete elements of the structures. ◦ DOE costing guidance did not anticipate the unusual spikes (\$125 million) in the cost for labor and certain construction commodities, such as steel. ◦ BNI, ORP, and EM never had a useful, realistic cost estimate or baseline. ◦ BNI and EM assumed incorrectly that the legacy design (from a previous contract) resolved most technological issues. ◦ Deleting work activities essentially financed some of the contingency costs and, along with frequent adjustments of the performance measurement baseline cost values, masked possible indicators of potential trouble. • DOE constraints on annual funding and the Tri-Party Agreement³³ constraints on the schedule opposed each other, and left ORP and BNI managers with an unrealistic schedule given the insufficient (but mandated) funding profile.

³¹ *Hanford Waste Treatment Plant, Contractor and DOE Problems Have Led to Higher Costs, Construction Delays, and Safety Concerns*, GAO-06-602T, April 6, 2006.

³² Statement of James A. Rispoli, Assistant Secretary for Environmental Management, before the Subcommittee on Energy and Water Development and Related Agencies, Committee on Appropriations, U.S. House of Representatives, April 6, 2006.

³³ The Tri-Party Agreement is an agreement between DOE, the State of Washington, and the U.S. Environmental Protection Agency that defines the terms and conditions of the cleanup of the nuclear waste at the Hanford Site.

Principal Causes Identified by GAO

- Contractor performance problems:
 - BNI significantly underestimated the price of steel and how much engineering effort would be needed to complete facility designs.
 - BNI continued to need increased contingency funding for unexpected problems. Adjusting for additional contingency funding added over \$2 billion to the cost estimate.
 - BNI failed on several occasions to ensure that nuclear safety requirements were being met, including allowing design changes to be made without following nuclear safety procedures and failing to detect serious construction flaws in tanks that will hold radioactive material in the facilities.
 - DOE management problems:
 - DOE followed an approach to constructing the project known as "fast-track," design-build—where design, construction, and technology development occur simultaneously. However, this approach is not proposed for designing and constructing one-of-a-kind, complex nuclear facilities because, among other things, it increases the risk of encountering problems that can adversely affect a project's cost and schedule.
 - DOE did not establish project management requirements.
 - DOE headquarters staff were not involved in evaluating project or contractor's performance.
 - Technical challenges:
 - problems with facility design and equipment took considerably more time and money than expected to address and correct
 - reengineering plant facilities to withstand earthquakes
 - correcting design and operation problems with waste mixing pumps
 - preventing flammable hydrogen gas from building up to unsafe levels in tanks and pipes
- As of April 2005, these technical challenges had added about \$1.4 billion to project cost estimates.

Principal Causes Identified by the Assistant Secretary for EM

- Cost and schedule controls were not adequate to establish and maintain a credible baseline.
- Adequate project management oversight resources and processes were not in place.
- Technology resources were not adequate to address first-of-a-kind problems.
- In the past, "optimism" all too often replaced "realism" within projections.
- Management of safety issues in design did not receive adequate attention.
- Complexity increased over time, and unanticipated issues continued to impact the project.

Current WTP Acquisition Issues

Assistant Secretary Rispoli is committed to ensuring that EM and the contractor have reliable management system controls in place and that they are using them. As noted above, in the original contract, BNI was not required to comply with DOE Order 413.3. That is no longer the case. Congress has required that BNI's Earned Value Management System (EVMS) be reviewed and certified by the Defense Contract Management Agency (DCMA).³⁴ Although the

³⁴ Conference Report for H.R. 5122, John Warner National Defense Authorization Act for Fiscal Year 2007, Section 3120.

contractor's EVMS has been certified for use under other government contracts, it does not meet the rigorous work breakdown structure reporting that DCMA insists is necessary for the WTP. Although ORP site management believes that DCMA is technically correct, it does not believe that changing BNI's system and supporting coding systems is worth the additional time and money (\$18-20 million) that it will require. It believes that BNI is currently generating the necessary data (albeit with manual adjustments from other databases), and that once the project finishes the design stage and enters construction exclusively, much more detailed information will be generated. Academy staff have been advised that EM management has discussed alternatives for resolving this issue with congressional staff and that congressional report language soon will be issued that will allow EM to pursue one of those alternatives.

PROJECT MANAGEMENT

I. REVIEW OF NATIONAL RESEARCH COUNCIL STUDIES

The Panel reviewed the results of National Research Council's (Council)³⁵ multi-year effort to assess the project management capabilities of the Department of Energy. The first review, conducted in 1998, focused on DOE's use of independent project reviews. This was followed by the 1999 Council report *Improving Project Management in the Department of Energy*. Council committees have assessed and suggested improvements to DOE's project management practices through six subsequent documents.

1999 Assessment of DOE Project Management

Kenneth Reinschmidt, Chair of the Committee for Oversight and Assessment of Department of Energy Project Management, offered the following assessment in a July 1999 National Academies press release:³⁶

There is no doubt that many of DOE's projects are difficult, complex and expensive. However, the public has a right to expect that more difficult projects get better project management, not worse. Most of DOE's projects could be brought in on time and on budget if the agency applied generally accepted project management practices. DOE's problems in this area are pervasive and rooted in a culture that lacks focus on project completion. Remedyng the agency's deficiencies will not be a quick fix; it will take time and require broad reform and leadership.

When the Council conducted its initial review, there was no single office within DOE solely responsible for project management. In addition, accountability was weak with blurred lines of authority among headquarters and field office personnel as well as independent contractors. The 1999 review made observations in several specific areas:

- **No Training Program**—With little coordination for project management activities, the Department was not developing project management skills in DOE staff. Because contractors perform 90 percent of DOE's work and, therefore, are for the most part the day-to-day managers of projects, DOE staff need to recognize their role as "Owner's Representatives." Federal project directors (FPDs) need both project management expertise and an understanding of how best to oversee contractor performance.
- **Poor Upfront Planning**—The Council cited numerous instances of poor planning, particularly noting that cost estimates were developed too early in the design phase. In addition, there was a lack of sophistication in assessing risk and setting appropriate contingencies for unexpected problems.

³⁵ The National Research Council is an arm of the National Academies that carries out much of the research and project work performed by those organizations.

³⁶ The National Academies (July 1, 1999). *Inadequate Project Management at DOE Results in Frequent Cost Overruns, Delays.* <<http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=9627>>

- **Lack of Internal Reviews for High-Value Projects**—Doing internal reviews before beginning construction for high-value projects (i.e., over \$20 million) helps to validate cost and schedule estimates and offers opportunities to benefit from lessons learned from other projects.
- **Inappropriate Contracting Practices**—Contracts often were not structured to reflect the level of uncertainty associated with the task, for example, using fixed price contracts for projects of high risk and uncertainty. In addition, insufficient use was being made of performance-based incentives to promote successful completion.

External Independent Review Issues: FY 2001-2003

In a later assessment of DOE's progress in improving project management, published in 2004, the Council identified issues compiled by DOE's Office of Engineering and Construction Management (OECM) from external independent reviews (EIRs) conducted during the FY 2001 to FY 2003 timeframe. These reviews included 19 projects, each with a total estimated cost of under \$100 million. They were evenly divided among the Office of Science, the EM Program, and NNSA.

Each project was at a stage where DOE leadership needed to decide whether or not the project was ready to move forward. The purpose of a review at this stage of project development is to assure the Department's leadership of the validity of the project's cost, schedule, and technical baseline, and that its control and project management systems are sound. Once this hurdle is overcome, then funds for the project can be included in the Department's congressional budget submission.

Experienced staff from outside the Department conduct the EIRs to ensure objectivity in their findings. Some of the key problems frequently cited by these independent review teams included:

- inadequate project definition
- lack of documented rationale for decisions
- weak risk assessment and/or risk management plans
- haphazardly setting contingency allowances that are not necessarily based on risk
- lack of integrated resource and cost-loaded schedules

Progress Made by DOE in Project Management

While the Council applauded the progress made by the Department since 1999 to improve management procedures and project performance, it considered the progress fragile and questioned whether it could be sustained. Its 2003 assessment, published in 2004, states the Committee's conclusion as follows: "Today, the consensus of the committee is that DOE project

management has significantly improved in the past 3 years but that progress is far from complete.”³⁷

II. MANAGING THE EM PROJECT PORTFOLIO

DOE Project Management Guidance

Project management within DOE is governed by DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*.³⁸ Released in 2000 and revised several times since, Order 413.3A contains standards and procedures for the performance of activities such as definition, execution, and closeout of projects; budget development for projects; establishment of performance baselines; progress reviews; change control activities; earned value management; integrated safety, environmental, quality assurance, and safeguards and security; and risk management.

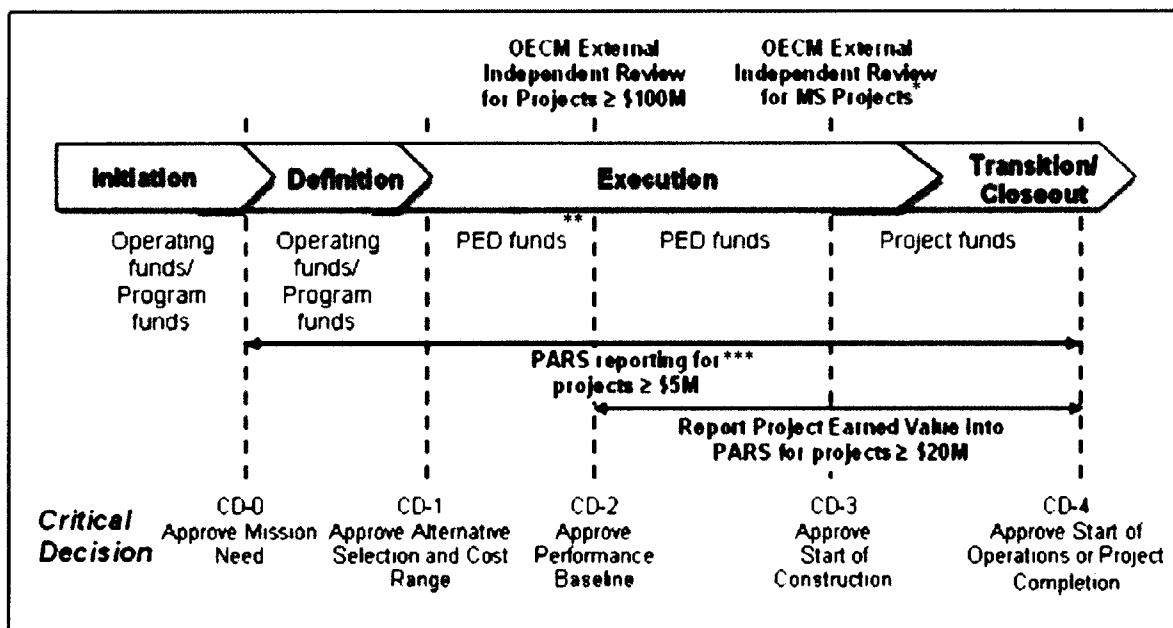
One of the most distinctive features of Order 413.3A as relates to EM projects is its mandate of validated performance baselines. Prior to the execution of work, all EM projects must have a “baseline” cost, schedule, and scope to which the project is expected to perform. Once work has begun, project performance must be tracked against the baseline, and any changes to the baseline above a certain threshold must be approved by EM or even DOE headquarters managers. Order 413.3A also is notable for its use of five decision “gates,” known as critical decision (CD) stages, which ensure timely oversight and accountability of projects.³⁹ Figure 1 provides an overview of these stages.

³⁷ National Research Council of the National Academies. *Progress in Improving Project Management at the Department of Energy: 2003 Assessment*. Washington, D.C.: The National Academies Press, 2004.

³⁸ <http://www.directives.doe.gov/pdfs/doe/doetext/neword/413/o4133a.html>

³⁹ Prior guidance documents also relied on a series of decision gates, but the criteria for passing through the CDs outlined in Order 413.3A are less subjective than in prior documents.

Figure 1: DOE “Critical Decision” Stages as Depicted by Order 413.3A



* A Major System (MS) project is a project with a total project cost of \$400M or more.

** PED is Project Engineering and Design.

*** PARS is the Project Assessment and Reporting System.

Some of the specific requirements for passing through each CD stage include:⁴⁰

CD-0: Initiation

- EM adopts Mission Needs Statement (MNS) for project site. MNS identifies project’s relationship to overall DOE goals and objectives; lays out possible alternatives; and previews steps to be taken leading to the next phase.
- Roles, responsibilities, and authorities for FPDs and integrated project teams (IPTs) are defined.
- Operating/program funds are used.

CD-1: Definition Phase

- Alternative is selected, mission is approved; conceptual design begins.
- FPD is appointed; IPT is chartered.
- Technical and acquisition strategies are developed.
- Preliminary risk, safety, and quality analyses are performed.
- Project status begins to be reported through DOE Project Reporting and Assessment System (PARS).
- Project Engineering and Design (PED) funds begin to be allocated and used.

⁴⁰ A complete summary of requirements for passing through CD stages can be found in Order 413.3A, pp. 7-9.

CD-2: Execution Phase

- Preliminary design completed to a level sufficient “to support development of the Performance Baseline.”
- Project Execution Plan (PEP) is updated and approved.
- Performance baseline is established and validated.
- Earned Value Management System (EVMS) is initiated; reporting of earned value (EV) data begins.
- OECM performs EIR of project scope, cost, and schedule; EM performs internal inspections of project technology and safety specifications.
- Risk, safety, and quality analyses continue to be updated; detailed risk analysis is performed using Monte Carlo analysis.
- PED funds continue to be used.

CD-3: Execution Phase (continued)

- For construction projects, physical construction begins; for operating and cleanup projects, work begun in CD-2 continues.
- Final technical design is completed.
- Preliminary Documented Safety Analysis is prepared.
- Transition from use of PED funds to project funds.

CD-4: Transition/Closeout Phase

- Transition/closeout strategy is developed.
- Lessons learned are documented.
- Documented Safety Analysis is prepared.
- Work is completed.⁴¹

An accompanying document to Order 413.3A is DOE Manual 413.3-1, *Project Management for the Acquisition of Capital Assets*.⁴² Approved in 2003, Manual 413.3-1 provides more detailed instruction on DOE-prescribed procedures for project management, and allows the individual programs within DOE to tailor the guidance provided by Order 413.3A to their specific mission needs.

⁴¹ For construction projects, a completed facility is commissioned and begins operating. For operating projects, the facility finishes operating and shuts down, or ownership is transitioned. For cleanup projects, environmental remediation and risk reduction are completed.

⁴² <http://www.directives.doe.gov/pdfs/doe/doetext/neword/413/m4133-1.html>

Efforts to “Projectize” the EM Portfolio

Many of Order 413.3A’s prescriptions are not clearly applicable to the operating and cleanup projects that are most common to EM. For example, EM has often combined approval of CD-2 and CD-3 for cleanup projects, which generally do not involve the design of any new facilities, thus obviating the requirement that facility design be substantially completed before work can begin. Moreover, environmental remediation work poses a unique challenge to the emphasis that Order 413.3A places on performing work according to an established performance baseline. In many cases, poor historical recordkeeping has made it difficult to predict precisely what type and duration of environmental remediation will be required at a given site. Moreover, because many of EM’s operating and cleanup projects involve the use of first-of-a-kind techniques, there is significant technical uncertainty associated with them. Because of this lack of stability, EM’s projects do not fall as easily into a project management framework.

In a letter sent to EM staff and managers in August 2005, the Assistant Secretary indicated a desire to “manage our projectized portfolio with a goal of attaining and sustaining, as a minimum, 90 percent of our portfolio of projects performing on, or better than, cost and schedule targets.” This echoes Secretary Bodman’s statement, made in a Department-wide memorandum also issued in August 2005, that Order 413.3A should be “followed scrupulously, without exception.” Since then, Assistant Secretary Rispoli has sought to ensure that all EM projects are managed by the precepts set out in Order 413.3A, accomplishing goals such as:

- placing 90 percent of EM project funds under defined cost, scope, and schedule baselines
- ensuring that all projects report progress against baselines using EVMS
- certifying all EM FPDs at appropriate levels of expertise, as defined by the DOE Project Management Career Development Program (PMCDP)⁴³

Currently, EM is pursuing a new round of efforts to projectize its portfolio, including mandating that all EM projects produce and execute against validated near-term baselines, as well as produce reasonable out-year funding estimates.⁴⁴

Baseline Management Framework

EM’s baseline management framework organizes the scope, schedule, and cost of all EM activities into discrete projects. Field projects that have common attributes, such as a common assumed end state, geographic location, or activity type, are typically grouped under the rubric of a Project Baseline Summary (PBS), which is directly linked to the more detailed project baselines developed by sites. PBSs maintain data at a summary level that includes the scope;

⁴³ This program was prompted partially by a DOE requirement that all FPDs have an appropriate level of training and experience to oversee projects by May 2006. The PMCDP is outlined in DOE Order 361.1A, *Acquisition Career Development Program*; it was added to Order 361.1A in 2004. Full text is available at <http://www.directives.doe.gov/pdfs/doe/doetext/neword/361/o3611a.html>.

⁴⁴ A memorandum issued jointly by Assistant Secretary Rispoli and OECM Director Paul Bosco in April 2007 defines a near-term baseline as covering “a minimum of five years or...the period of performance for the current contract if it exceeds five years.”

schedule; cost; life-cycle performance measurement metrics and annual performance targets; financial history and budget; and other information such as project risks. PBS data function as the main source of project information at the headquarters level and is used for planning, budgeting, and management across the complex. Summary level PBS data also are used for budget formulation and presentation and project performance tracking.

Sites are responsible for developing detailed project baselines for all field projects, consisting of activities conducted in the EM program (e.g., environmental restoration, waste management, infrastructure, and long-term surveillance and monitoring). Each project must have a defined scope that guides managers in implementing each step of a project activity. In addition, each project includes a quantitative expression of the engineering approach (i.e., scope, technical approach, schedule, cost requirements, and uncertainties) against which the status of resources and the progress of projects can be measured. All EM projects at a site comprise an integrated site baseline. Site baselines span the life cycle of all projects at the site and present a definition of overall cleanup requirements, individual cleanup milestones, critical interactions between projects, and costs over time.

III. FEDERAL OVERSIGHT OF CONTRACTOR PERFORMANCE

EM's federal staff is focused on oversight of contractor performance. EM's ratio of contractors to federal employees,⁴⁵ as well as the diverse and complex nature of the various sites located across the complex, make it one of the most contractor-reliant agencies in the federal government today, and necessitates a strong oversight regime.

Use of Earned Value Management

Although projects are tracked by senior managers at the PBS level, site managers receive data from contractors at a far more detailed level, using a method of organizing work known as a Work Breakdown Structure (WBS). Producing a WBS consists of dividing each project into its constituent tasks. EM contractors cross-matrix WBS elements with entities responsible for performing particular types of work, known as "functional organizations." The intersections between WBS elements and functions are known as "control accounts," and each of these represents a unit of work that is assigned an expected cost and schedule for completion. From this point forward, the progress of actual work is tracked against this baseline expectation of cost and schedule, producing quantifiable measures of progress and allowing for analysis of important trends.

In order to track progress on each PBS and its constituent sub-projects and control accounts, EM requires its contractors to employ EVMS. Originated at the Department of Defense (DoD), EVMS was present in some of DOE's early project management guidance, but first began to be used consistently with the adoption of Order 413.3A. The burden of installing a working, verified EVMS, as well as that of collecting and inputting data on a daily basis, is entirely on the

⁴⁵ Approximately 1,100 EM site staff manage a contractor force of about 34,000, for a ratio of about 31 contractors per federal employee.

contractor responsible for the work being monitored. EVMS analyzes and reports deviations from baseline projections using two main types of metrics:

- **Variances**—Cost variance (CV) and schedule variance (SV) report deviations from baseline cost and schedule projections, respectively, in absolute terms. For example, work that is projected to cost \$100 million, but actually costs \$120 million, reports a cost variance of +\$20 million.
- **Indices**—Cost performance index (CPI) and schedule performance index (SPI) report the ratio of actual performance to baseline expectations. For example, if a project baseline expects 10 waste storage tanks to have been shipped to date, and 8 have actually been shipped, that project reports an SPI of 0.8.

The current standards for a certified EVMS are prescribed in ANSI-EIA-748-A-1998,⁴⁶ which contains 32 guidelines broken down into 5 categories: Organization; Planning and Budgeting; Analysis; Revisions; and Accounting. To ensure contractors' compliance with these guidelines, each EVMS established at a project site is verified by OECM, often in conjunction with the Defense Contract Management Agency or the Defense Contract Audit Agency. As of September 2007, less than 40 percent of EM contracts were being executed under a certified EVMS. Efforts to certify all EM contractors' EVMS are currently ongoing.

Few FPDs had any resource or method for ensuring that a contractor's EVMS remains compliant with these standards throughout the life of the project, or for verifying the EV data that is recorded by contractor employees. Some OECM officials raised concerns with respect to the ability of FPDs and their staffs to use EVMS to manage their projects, i.e., their ability to analyze EV data and relate it to project performance. They indicated that the requisite level of expertise cannot be gained through classroom training alone, and requires on-the-job experience. Several EM headquarters officials also expressed frustration that the information generated by EVMS is not always used with maximum effectiveness, and are concerned that EM staff do not have the needed expertise in EVMS. EVMS was originally designed to track production or line construction projects, and works best for projects where cost and schedule are relatively fixed. Most site managers are not trained to understand the caveats raised by the application of EVMS to cleanup and disposition operations, which are inherently more prone to deviate from baseline expectations of cost and schedule.

A memorandum issued by EM's Deputy Assistant Secretary for Acquisition and Project Management in July 2007 mandated that all EM sites have contractors produce a Contract Performance Report (CPR), a contractor-produced report that provides project status information on a by-contract basis in five different reporting formats: Work Breakdown Structure, Organizational Categories, Baseline, Staffing, and Explanations and Problem Analyses. DoD uses these five reporting formats widely in conjunction with EVMS. The memo stated:

In order to establish a minimal EV reporting requirement, effective September 2007, all projects should report EV data in the following five Office of Management and Budget Contract

⁴⁶ "ANSI" is the American National Standards Institute. ANSI-EIA-748-A-1998, published by the American National Standards Institute, is the official set of standards for a functioning, verifiable EVMS implementation.

Performance Report Formats...These formats may be modified to add additional information or to meet unique EM reporting requirements, such as the three elements making up the life cycle cost (prior, near-term, and out-year planning estimate range); however, basic EV elements of the formats should remain. Other reporting information and data like safety, schedules, milestones, regulatory requirements, etc. may be added to the monthly report at the discretion of the Federal Project Director to ensure proper oversight can be performed and the project can be managed.

The memo also called on each EM site to:

[D]evelop an EV surveillance plan by October 1, 2007, which will establish a plan for the site to review the contractor's EV system on a monthly basis, reviewing reports (CPRs, Risk Plans, BCP⁴⁷ Logs, Variance Reports and Corrective Action Plans) and periodically sampling a set of the 32 guidelines established in the ANSI/IEIA-748A Standard and Intent Guide. Surveillance should be a continuous activity throughout the contract period of performance to ensure that the contractor is utilizing the EV system that was certified or is utilizing an EV system that is capable of being certified. The results of the surveillance reviews should be provided to the Chief Operating [sic] Officer and the Office of Project Management Oversight. Any deviations or changes in the certified system or practices that are not in compliance with one of the 32 ANSI/IEIA -748A guidelines should be highlighted in the report to Headquarters to determine if additional actions are required. The Office of Project Management Oversight can provide assistance in developing the surveillance plan and conducting the reviews.

Factors Limiting EVMS Usefulness

Inconsistent contractor practices for denoting accruals of work performed can produce misleading and often implausible cost and schedule performance data. Academy staff observed this phenomenon several times during EM Quarterly Project Reviews (QPRs).⁴⁸ Another factor is the EM procedure for altering project performance baselines, known as the baseline change proposal (BCP) process. BCPs are generally initiated by FPDs or other field managers because of changes in work scope, adjustments to regulatory milestones, or other such circumstances.⁴⁹ Once submitted to EM headquarters, BCPs may be processed and approved within EM, or they may require review and concurrence from an outside entity such as OECM or the EM Acquisition Advisory Board (EMAAB),⁵⁰ depending on factors such as the type of project and the magnitude of the change requested.

EM headquarters staff indicated that BCPs can take between three and six months to process, and in some cases, independent reviews and resultant corrective actions that must be taken before a BCP can be approved can extend the entire process to a year. Field and headquarters managers noted that once a BCP is sent to EM headquarters, the process by which it is reviewed is mostly opaque to field managers, and Academy staff found that field staff were not always clear as to when a BCP is reflected in the Integrated Planning, Accountability and Budgeting System (IPABS), which is the project-based management system that supports all of EM's project work.

⁴⁷ "BCP" is a baseline change proposal, and is discussed in the following section.

⁴⁸ EM's QPRs are discussed in Section IV of this appendix, "EM Headquarters Oversight of Project Performance."

⁴⁹ BCPs also may be submitted in response to major cost or schedule overruns, although EM headquarters staff indicate that they generally do not condone BCPs as a response to poor project performance alone.

⁵⁰ The EMAAB, chartered by Assistant Secretary Rispoli in December 2006, has responsibility for "endorsing and submitting...Performance Baseline Deviations...requests to S-2 or S-3 for final decision."

Some field staff interviewed believed that this contributes to an unclear picture of IPABS' capabilities among staff in the field. FPDs also reported that until EM approves a BCP, the project baseline in IPABS does not match the baseline against which work is executed in the field. Because EVMS performance metrics for QPRs are computed using the baseline data contained in IPABS, many FPDs were forced to keep two sets of data to track their projects' progress—one that corresponds to the baseline in IPABS and one that reflects the work actually being performed.

Academy staff noted a lack of resources available to FPDs to challenge contractor estimates of the value of work performed, which complicates the usefulness of EVMS. EM staff reported several cases where instabilities in contractors' EV data from month to month produced a high level of uncertainty regarding the quality of overall EV installations. In addition, several FPDs indicated that their personal efforts to validate contractor EV data revealed the data to be of poor or inconsistent quality. Many FPDs said that a cost-estimation capability internal to EM would allow them to verify contractor estimates of work performed, and ultimately, to produce more accurate EV data.

Many FPDs throughout the complex have devised and deployed a wide array of their own "desk drawer" systems for managing project performance on a day-to-day basis. One such system, created by federal staff, consists of spreadsheets, which must be updated manually, that track certain specific EV metrics. Another system, developed by the Nevada Site Office (NSO), consists of an extensive system for tracking all aspects of project performance, including regulatory milestones and all incoming and outgoing correspondence at the site. In contrast to NSO, other EM site offices have a sparse array of project management tools at their disposal. Some senior EM headquarters managers expressed a desire for EM to supply FPDs with a standard "toolbox" of project management tools to supplement EVMS.

Managing Schedule Performance and Regulatory Milestones

Academy staff found several instances where FPDs either had no formal scheduling tools that incorporated external project milestones—including at least one case that resulted in a critical project milestone being missed—or relied on self-made systems that did not include logic ties between external milestones and project tasks. Currently, most sites use scheduling software that is provided and operated by contractors. However, the format and depth of scheduling data can differ by contractor, making it difficult to coordinate data across various PBSs at a single site or across sites. Headquarters managers reported difficulties in coordinating activities, such as shipping waste between sites, due to the lack of a standardized scheduling format for EM field sites.

The EM Office of Project Management Oversight has undertaken an initiative, assisted by project management subject matter expertise from the firm of High Bridge Associates, Inc., to standardize project scheduling data⁵¹ across the EM complex and integrate them into a headquarters-level Environmental Management Integrated Schedule (EMIS). According to EM, EMIS is "a corporate project management tool intended to capture both approved baseline and

⁵¹ Project scheduling data in this instance are distinct from EV-based cost and schedule data, although both will ultimately be part of the standardization effort.

current working schedules, both federal and contractor” that will “provide EM Senior Management with a tool that allows critical path analysis, identification of site/project interfaces and major decision points, and performs high-level schedule ‘what if’ analyses.”⁵² EMIS operates on a real-time basis, as opposed to the one- to two-month time lag that often affects data in IPABS.⁵³ The EMIS was operational as of October 2007 and will continue to be updated with additional functionality. The extent to which EM contractors will be required to interface with the EMIS is not yet clear.

Lack of Federal Project Staff at EM Field Sites

EM’s federal staffing levels are low relative to other agencies with similar missions, such as the U.S. Army Corps of Engineers and U.S. Naval Facilities Engineering Command, particularly in the area of project controls personnel. Within the context of EM, the field of project controls encompasses a number of responsibilities relating to managing project performance, including:

- supporting validation of project baselines, including monitoring federal and contractor corrective actions required by EIRs
- monitoring project performance against a project baseline, relying primarily but not entirely on multi-level analysis of EV data
- coordinating project documentation, such as PEPs and risk management plans (RMPs)
- producing reports on project performance trends and challenges, including preparation of QPR and other presentations for EM headquarters managers
- supporting certification of contractors’ EVMS, including monitoring corrective actions identified by OEMC review process
- monitoring contractors’ EVMS for continuing compliance with original certification standards
- ensuring the timely and proper dissemination of project EV data into DOE reporting systems such as IPABS, as well PARS

In interviews at field sites, FPDs often cited their inability to perform in-depth review of EV data as being of particular concern. FPDs often lack enough staff with the time and expertise to “dig in” below top-level EV data to isolate the root causes of cost and schedule overruns. Academy staff observed that very few project control officers (PCOs)—the job classification that includes training in in-depth EV analysis—have been deployed in the field. Although all EM field sites visited by Academy staff had some federal staff tasked with looking at some aspect of project controls, a review of personnel classifications for EM field staff indicate that only three sites—Lexington, Savannah River, and Richland—have formally designated, dedicated PCOs.⁵⁴ (See Table 1.)

⁵² Source: EMIS Definition Documentation.

⁵³ True real-time reporting is not feasible due to contractor practices for documenting work accruals. EMIS will, however, eliminate the time lag that currently exists between field and headquarters systems.

⁵⁴ Academy staff are aware that, for reasons not directly related to project management issues, some staff acting as dedicated PCOs at field sites may be doing so under different job classifications.

Table 1: Project Control Officers/Specialists at EM Field Sites

Site Office	No. of PCOs	Grade Levels
Lexington	1	GS-14 (1)
Savannah River	3	GS-12 (2) GS-13 (1)
Richland	10	GS-13 (2) GS-14 (8)
Richland PIC ⁵⁵	12	GS-13 (6) GS-14 (4) GS-15 (1)

Of these, only Richland, as of May 2007, has assigned a PCO to each project at the site. Richland also is unique, as of this writing, in its establishment of an internal organization dedicated explicitly to issues of project performance control—the Office of Project Performance and Regulatory Integration (PPRI), and within that, the Project Integration and Controls (PIC) group.⁵⁶

During visits to field sites, Academy staff observed a number of consequences stemming from the relative lack of PCOs. First, because PCO duties often are one of several functions assigned to project team members, attention paid to these issues is sometimes less than if staffers were dedicated solely to them. Moreover, because project control responsibilities are often spread among several federal staff, there may not be the integration of those activities into an overall project controls posture.

Need for Federal Cost-Estimating Capability

Although OECM's standard audit of an on-site EVMS includes some verification of the contractor's cost estimation practices, EM does not currently have a staff of internal cost estimators capable of analyzing cost estimates over the life of a project. Staff with these skills are limited in number and are located primarily in headquarters offices. In some cases, to help address this skill gap, EM makes use of support service contractors to provide cost engineering services to EM field sites. These services include general cost estimation, validation of contractor cost estimates, baseline validation, review of risk management plans, and independent technical reviews. However, several EM staff have voiced concern that cost estimation has no internal "home" within EM, and is not prioritized as a matter of policy "until something goes wrong."

⁵⁵ Counts all non-administrative staff assigned to the Project Integration & Controls (PIC) group within the Office of Project Performance & Regulatory Integration.

⁵⁶ PPRI is the office at Richland tasked with functions such as multi-year planning, baseline integration, work breakdown structures, earned value management, performance incentives, and other areas relating directly to project performance. Within that group, PIC is responsible for issues relating specifically to project control.

As of November 2007, the EMCBC had been selected by EM headquarters as the location of a new complex-wide federal cost estimating resource. EMCBC has brought a veteran cost estimation subject matter expert to provide initial field support and policy direction, and has requested additional full-time equivalents (FTEs) in order to fully staff this function. In addition, Academy staff have been informed that a department-wide cost estimation group is currently being established by the Office of the Chief Financial Officer. This group will have responsibility for training in cost estimation, and will encourage federal staff to pursue certification from external bodies, but is unlikely to establish any kind of cost estimating certification internal to DOE.

Several EM staff identified a need for enhanced internal cost estimating capabilities and suggested several possible mechanisms for enhancing those capabilities:

- Enhanced use of the Environmental Cost Analysis System (ECAS), an historical database that allows for “storing, retrieving, and reporting historical costs for completed and active phases of DOE environmental projects.”⁵⁷ ECAS is currently maintained by DOE’s National Energy Technology Laboratory.
- Enhanced use of the Environmental Cost Element Structure (ECES), a tool developed by EM because it had “no standardized method or guidance on what cost data should be collected, to what level of detail, or how to collect & maintain the data.”⁵⁸ ECES is essentially an alternative WBS, providing a comprehensive list of project elements and offering guidance on how to collect and maintain cost data for these elements.
- Enhanced use of the Remedial Action Cost Engineering and Requirements (RACER), a parametric cost estimating system adapted specifically for environmental remediation projects. RACER is currently used by the U.S. Air Force and is available as an off-the-shelf solution for cost estimation.

EM Actions to Enhance Federal Capacity for Project Management

Beginning in March 2007, EM undertook an effort to improve its project management capacity by substantially enlarging its federal project management staff, both at field sites across the EM complex as well as in EM headquarters. Through an interagency agreement with the U.S. Army Corps of Engineers (COE), EM has contracted with the firm Project Time & Cost, Inc. (PTC) to identify skill gaps in EM’s current project management regime and, ultimately, to federalize these skills into the EM workforce. The initiative, Best-In-Class Project and Contract Management, consists of teams composed of EM staff and PTC employees that assess project management at EM field sites. The assessment is focusing on:

- overall site assessments of skills gaps in areas such as planning, budgeting, cost estimating, scheduling, project controls, and performance measurement
- specific areas of noncompliance with DOE Order 413.3A

⁵⁷ ECAS User’s Manual. <<http://ecas.apps.em.doe.gov/ecasmanual.pdf>>

⁵⁸ ECES User’s Manual. <http://web.em.doe.gov/aceteam/ECES_User_Manual_3.pdf>

- particular emphasis on project controls, including training of FPDs, enhanced accuracy in project performance reporting, and the enhancement of a project controls-oriented culture for all EM federal staff
- the creation of credible and defensible five-year baselines for EM projects
- EM's approach to risk management, including allocations of risk-related funding
- other site-specific priorities, such as assisting with ongoing independent cost estimates and CD schedules

Following this assessment, EM will rely on non-DOE employees to fill observed skills gaps at field sites. These will be mostly PTC employees, although it is expected that up to 15 percent will be federal COE civilian employees. Ultimately, EM plans to replace these resources with federal staff, preceded by a period of mentoring by the contract employees.

IV. EM HEADQUARTERS OVERSIGHT OF PROJECT PERFORMANCE

EM headquarters managers rely on three main types of mechanisms to keep abreast of project performance:

- automated systems, such as IPABS and PARS, which “roll up” detailed performance data to the PBS level
- first-hand accounts from project managers themselves, particularly the EM QPR process
- rating metrics, such as the color-coded project assessments that appear in OECM’s monthly reports to the Deputy Secretary, which rely on a combination of automated and narrative feedback to produce an overall “rating” of project performance

Automated Reporting Systems

IPABS is an automated system that integrates EM’s planning, budget, and execution business processes. According to Project Performance Corporation (PPC), the contractor that provides the IPABS software:

In 1998, EM hired PPC to develop an Integrated Planning, Accountability, and Budgeting System - Information System (IPABS-IS) - a single information management system for all the programs and activities overseen by EM. The goal of IPABS-IS is to meet all of EM’s data and reporting needs using a secure web-based data collection and reporting system. IPABS-IS collects life-cycle cost, scope, and schedule data as well as budgetary, financial, performance metrics, critical milestones, and waste disposition information. Data input from 21 offices is now reported in a consistent format and time frame, validated and reviewed within the system, and maintained in a single repository...PPC also developed a workflow component of IPABS-IS that tracks the submittal of Baseline Change Proposals to the EM Configuration Control Board. Since

APPENDIX C

development of IPABS-IS in 1998, PPC has maintained and updated the system to reflect requirement changes and additional functionality.⁵⁹

The first incarnation of IPABS, known as the Integrated Database Management System (IDMS), was deployed in early 1999 to collect planning and budget formulation data. IDMS was transformed into IPABS by the gradual addition of modules that include planning, budget formulation, budget execution, and project execution. Two other modules, the Budget Automation, Justification, and Administration tool and the baseline change tool, also have been added.

EM has elected to pursue a wholesale revision of the IPABS system. EM has convened an IPABS Steering Committee to “discuss IPABS-IS⁶⁰ related issues, topics and concerns, conduct periodic reviews of IPABS-IS data elements and system functionality to eliminate duplicative or out-of-date data elements, consider requests for new elements and functionality, and make recommendations regarding changes and improvements to IPABS-IS.” Once this revision of IPABS is complete, EM will provide training on the new system. The committee has had several meetings and informally identified areas of needed improvement, but has not yet produced a document defining the functional requirements for a replaced or modified IPABS, although it has plans to do so

At the DOE level, PARS serves as a central repository for project performance data. According to DOE:

[PARS] is part of the DOE’s project reform initiative that was launched in June 1999. The purpose of PARS is to deliver project status and assessment information to Department of Energy (DOE) senior managers and key program stakeholders...The project assessment system is based on Earned Value Management System (EVMS) standards. Federal Project Directors (or their appointed designee) are responsible for entering monthly Earned Value (EV) data at the very highest summary level for their projects. The EVMS provides cost and schedule performance metrics that report progress against an integrated baseline. These metrics are effective summary level project measurements that senior executives can use to assess current project and program status.⁶¹

Reports generated by PARS are used by DOE and EM senior leadership to track project progress. The content of PARS reports may vary from site to site, but generally include the overall project PBS; the current month’s budgeted cost of work performed, budgeted cost of work scheduled, and actual cost of work performed; cost and scheduling variances; and a red-yellow-green rating based on CPI and SPI calculations.⁶² In general, the data in IPABS and PARS do not go below the PBS level.

⁵⁹ Project Performance Corporation. *Case Study: Getting the Facts Right: Integrated Planning, Accountability, and Budgeting System for DOE’s Office of Environmental Management.*

<http://www.ppc.com/inside_knowledgecenter.asp?doc=130>

⁶⁰ “IPABS-IS” here denotes the actual user interface and tools included in the IPABS management system; the “IS” stands for “Information System.”

⁶¹ Department of Energy. *Department of Energy – PARS.*

<http://management.energy.gov/online_resources/1410.htm>

⁶² OEMC project color assessments are discussed in greater detail later in this section.

In May 2007, OECM began effort to replace the PARS reporting system. OECM has selected a vendor, but is waiting to coordinate with other program offices before making a final award.

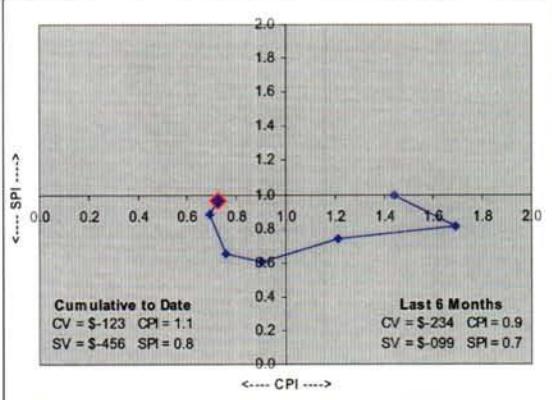
Quarterly Project Reviews

The EM QPR process was initiated by former Assistant Secretary Paul Golan, and has been continued with a revised format by Assistant Secretary Rispoli. QPRs generally last between one and two hours per site. During that time, site-based personnel, primarily the site manager and FPDs⁶³ make presentations regarding the performance of individual projects at the site to EM headquarters leadership, including some combination of the Assistant Secretary, the PDAS, the COO, and the various DASs. This is generally augmented by the attendance of representatives outside of EM, such as NNSA when a project at an NNSA-owned site is being discussed, or OECM. Each QPR begins with site personnel making presentations to headquarters on a by-PBS basis, which the site must prepare based on guidance issued from the Office of Project Management Oversight. Issues raised by this presentation are then discussed in a question-and-answer format.

Generally, all QPR presentations have a cover sheet, as depicted in Figure 2 on the following page, consisting of a project color assessment; PBS information (life-cycle cost, validated near-term baseline information, etc.); a chart tracking EVMS performance indices over a period of time; color assessments of specific safety areas; and a brief list of major project risks and proposed mitigation strategies. The chart depicting EVMS data appears to cause particular concern among field staff because, as with EVMS itself, constantly-changing baselines and inconsistent contractor practices for denoting accruals of work performed can often render these charts misleading or incoherent.

⁶³ Site personnel may be physically present in DOE headquarters, or may participate by telephone or videoconference. Generally, at least one or two high-level site personnel appear physically at headquarters.

Figure 2: Sample EM QPR Presentation Cover Sheet⁶⁴

<p>Site: Site XYZ PBS: #0123</p> <p>FPD Assessment: </p> <p>Title: Facility Decontamination and Decommissioning (D&D)</p> <p>Total Project Cost (TPC) Near-Term Baseline: \$4,567M Life Cycle Cost = \$9,432M Estimate at Completion = \$10,123M</p> <p>Validated TPC: Yes No X</p> <p>Date:</p> <p>Contractor: Cleanup, Inc.</p> <p>Status: CD-0 CD-1 CD-2 X CD-3 CD-4</p> <p>Project Description: This project is D&D of all facilities at site XYZ.</p>	<p>EARNED VALUE MANAGEMENT Monthly Cost and Schedule Indices</p>  <table border="1" style="margin-top: 10px;"> <thead> <tr> <th colspan="2">Cumulative to Date</th> <th colspan="2">Last 6 Months</th> </tr> <tr> <th>CV</th> <th>SV</th> <th>CV</th> <th>SV</th> </tr> </thead> <tbody> <tr> <td>=\$-123</td> <td>=-\$456</td> <td>=\$-234</td> <td>=-\$099</td> </tr> <tr> <td>CPI = 1.1</td> <td>SPI = 0.8</td> <td>CPI = 0.9</td> <td>SPI = 0.7</td> </tr> </tbody> </table>	Cumulative to Date		Last 6 Months		CV	SV	CV	SV	=\$-123	=-\$456	=\$-234	=-\$099	CPI = 1.1	SPI = 0.8	CPI = 0.9	SPI = 0.7																
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<p>KEY PROJECT RISK and RISK MITIGATION</p> <p>Risk: In danger of breaching EPA milestones.</p> <p>Planned Action: Work with EPA to adjust milestones.</p> <p>Risk: Technology for D&D of complex facility possibly not suitable for application.</p> <p>Planned Action: Perform Technology Readiness Assessment to assess technology maturity.</p>	<p>SAFETY PERFORMANCE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Occurrence Category</th> <th>Assessment</th> </tr> </thead> <tbody> <tr><td>TRC Rate</td><td style="background-color: green;"></td></tr> <tr><td>DART Case Rate</td><td style="background-color: yellow;"></td></tr> <tr><td>Significant Injuries</td><td style="background-color: green;"></td></tr> <tr><td>Near Misses</td><td style="background-color: green;"></td></tr> <tr><td>Industrial Operations</td><td style="background-color: green;"></td></tr> <tr><td>OS/IH</td><td style="background-color: green;"></td></tr> <tr><td>Fire Protection</td><td style="background-color: green;"></td></tr> <tr><td>Electrical</td><td style="background-color: yellow;"></td></tr> <tr><td>Authorization Basis</td><td style="background-color: green;"></td></tr> <tr><td>Nuclear Criticality</td><td style="background-color: green;"></td></tr> <tr><td>Radiological Control</td><td style="background-color: green;"></td></tr> <tr><td>Conduct of Operations</td><td style="background-color: green;"></td></tr> <tr><td>Quality Assurance Profile</td><td style="background-color: yellow;"></td></tr> <tr><td>Equipment Degradation/Failure</td><td style="background-color: green;"></td></tr> <tr><td>Environmental Release</td><td style="background-color: green;"></td></tr> </tbody> </table>	Occurrence Category	Assessment	TRC Rate		DART Case Rate		Significant Injuries		Near Misses		Industrial Operations		OS/IH		Fire Protection		Electrical		Authorization Basis		Nuclear Criticality		Radiological Control		Conduct of Operations		Quality Assurance Profile		Equipment Degradation/Failure		Environmental Release	
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In general, the institution of QPRs is widely perceived as a positive development because they help the field raise important issues to headquarters' attention and provide headquarters managers with information on project performance, albeit at a summary level. However, attitudes in the field are mixed as to the worthiness of the effort that goes into preparing QPR presentations, particularly given the amount of time devoted to dry-run "rehearsal" presentations in advance of actual QPR sessions. Many FPDs noted that this process is especially time- and labor-intensive due to what is seen as ever-changing guidance from EM headquarters on the format for QPR presentations.

FPDs also expressed some frustration that the QPR format mandated by EM headquarters prevents FPDs from presenting their projects in a higher level of detail. Several expressed a desire to include in their presentations supplemental materials, such as photographs of individual work sites and explanations of technologies being employed. A senior EM official noted, however, that such information may not be appropriate for QPRs, which is a forum to discuss only high-level or high-risk issues that require headquarters awareness or intervention.

⁶⁴ All figures and other project data are fictional.

However, at the QPRs the Academy staff observed, senior EM managers routinely posed questions at a level of detail similar to what FPDs said they would like to include in their presentations.

Particularly during the February 2007 QPRs, Academy staff noted that a substantial portion of time was spent having field personnel explain why the information contained in the main EVMS performance display and other EV-based graphs was inaccurate, out-of-date, or otherwise did not reflect the true status of the PBS in question. This phenomenon was less prevalent during subsequent rounds of QPRs, but nonetheless remained an issue. Due to these factors, many FPDs interviewed expressed skepticism about whether the information conveyed by QPR presentations could be properly understood by, or useful to, headquarters managers in monitoring project performance.

Since the February 2007 round of QPRs, EM has worked to modify and improve QPR format and procedures. Beginning in May 2007, a number of changes took effect:

- The preparation of QPR presentations was automated to retrieve and display data directly from IPABS. This change provided a previously-unseen level of uniformity to the QPR presentations, but in several cases, also had the adverse effect of measuring EV performance against outdated baselines that had not been updated in IPABS.
- The OECM color assessment of each PBS was replaced by a color assessment determined by the FPD.
- All QPR presentations included an integrated schedule of the status of project milestones that is generated by headquarters, using scheduling data collected from field sites.

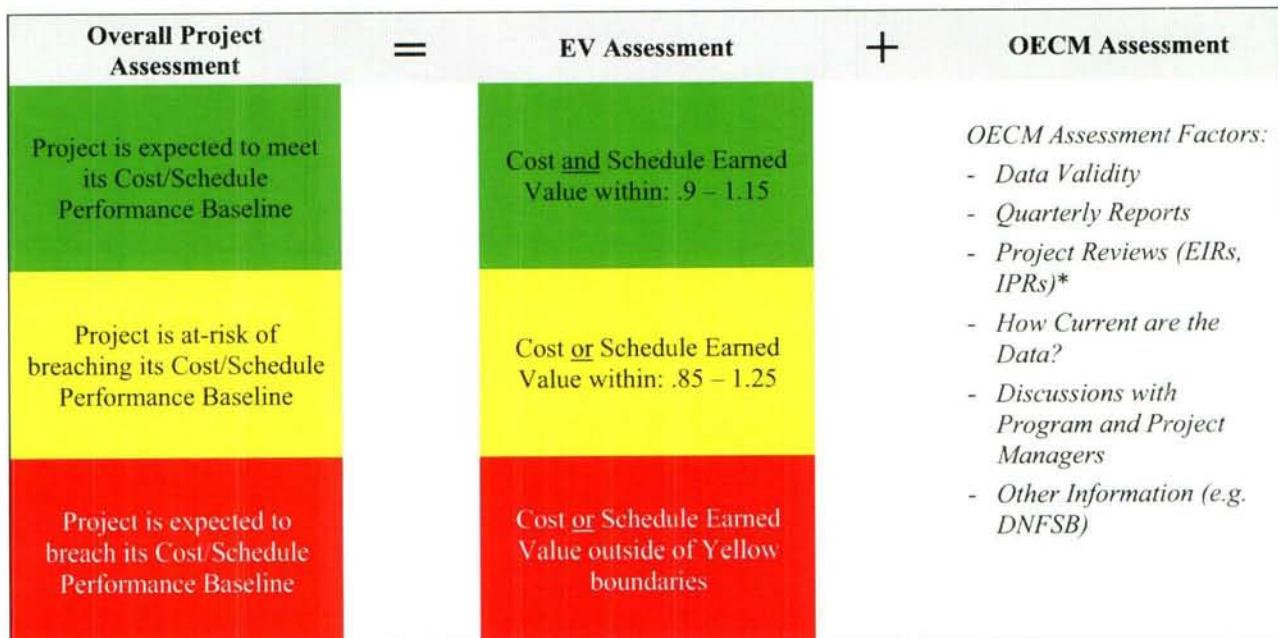
During the August round of QPRs, the most notable change was to the duration and schedule of QPRs. EM has extended the schedule for QPR presentations, with one or two QPRs conducted per week over a period of three months. Previously, QPRs for all EM sites had been conducted over a span of one to two weeks. The revised schedule is expected to allow more time to address issues that arise during QPR sessions.

During the February 2007 round of QPRs, Academy staff observed that discussions at QPRs focused almost exclusively on performance-related data, with little if any comparison of project performance against fiscal year project funding constraints. August 2007 QPR presentations did contain a simple comparison of fiscal year funds versus expected project costs, and this did spur enhanced discussion of funding issues at QPR sessions. However, the EM Office of Project Management Oversight has been working with the Office of Budget to produce a QPR template showing more in-depth analysis of the issue. Several EM officials indicated that budgetary concerns could easily be incorporated into QPR discussions without unduly merging the two areas, and producing projections of project performance data against budget data is a standard practice at DoD. Moreover, increased attention to funding issues could help EM field sites and headquarters to adopt a more coordinated, proactive approach to reprogramming requests.

Metrics for Assessing Project Performance

On a monthly basis, OECM evaluates each project in the EM portfolio, using EV performance as well as a number of other factors, such as the timeliness of EV data, results of independent reviews, and discussions with project managers.⁶⁵ Based on this assessment, OECM issues a project rating of ‘green,’ ‘yellow,’ or ‘red.’ Figure 3 depicts OECM’s rating process, as shown in OECM’s monthly reports to the Deputy Secretary.

Figure 3: OECM Color Assessment Scheme



*IPRs are independent project reviews.

Order 413.3A defines the color ratings in the following manner:

- Green—Project is expected to meet its cost, schedule, and performance baseline.
- Yellow—Project is at risk of breaching its cost, schedule, and performance baseline.
- Red—Project is expected to breach its cost, schedule, and performance baseline.

Granularity of Project Performance Metrics

Academy staff explored several alternative schemes for assessing project performance at the PBS level. One originates from an EIR performed at the Fernald Closure Site in 1999 by the firm Deloitte and Touche. This scheme, shown in Figure 4, includes “Critical Success Variables,” including categories such as cost, schedule, technical scope, quality, regulatory issues,

⁶⁵ Order 413.3A indicates that OECM must perform this assessment only for “projects having a Total Project Cost greater than or equal to \$100M and Environmental Management Clean-Up Projects having an Total Project Cost greater than \$400M.” However, nearly all projects in the EM portfolio fit within this criterion, and are thus assessed by OECM.

management, and procurement, which can be customized to suit the peculiarities of EM projects on a by-PBS (or smaller) scale.

Figure 4: "Critical Success Variables" Model⁶⁶

Critical Success Variable	PBS 01	PBS 02	PBS 03	PBS 04
Cost	█	█	█	█
Schedule	██	██	██	██
Tech. Scope	██	██	██	██
Quality	██	██	██	██
Regulatory	██	██	██	██
Management	██	██	██	██
Procurement	██	N/A	██	N/A
Safety	██	██	██	██
FY Funding	\$250M	\$1.86B	\$736M	\$19M

In addition, several EM sites, including Fernald and Richland, have produced site-level, project-specific metrics for measuring project progress, as depicted below in Figure 5. These are customized to the nature of the project work in question, and in some cases, are formulated in collaboration with contractors. One former project manager from Fernald indicated that the ability to develop and be held accountable to EM headquarters for customized metrics helped improve the site's relationship with both the contractor and EM headquarters and, ultimately, contributed to the success of the project.

Figure 5: Customized Performance Measures Model⁶⁷

PROJECT PERFORMANCE MEASURES – SITE XYZ, PBS 123						
Performance Measures	HQ Certified	PBI in Contract	Unit	Current Month	Actual To Date	Life Cycle
Waste Shipped to WIPP Facility	<u>Yes/No</u>	<u>Yes/No</u>	Gal. of Waste	Plan	1,405	12,849
				Actual	1,501	11,384
				Variance	+96	-1,465
Waste Disposed On-Site	<u>Yes/No</u>	<u>Yes/No</u>	Gal. of Waste	Plan	2,405	19,958
				Actual	984	10,059
				Variance	-1,421	-9,899
Facilities D&D Completed	<u>Yes/No</u>	<u>Yes/No</u>	Sq. Ft. of Facilities	Plan	305	8,190
				Actual	305	8,183
				Variance	0	7

⁶⁶ All figures and other project data are fictional.

⁶⁷ All figures and other project data are fictional.

A similar concept already exists within EM. In March 2006, DOE published a Five-Year Plan for the EM program. This included the establishment of 16 task-specific Corporate Performance Measures, such as liquid waste eliminated, number of nuclear facilities completed, and number of geographic sites closed.⁶⁸ Each of these is associated with a specific performance target for each year from 2007 to 2011. Currently, these performance data are addressed by PBS in EM's congressional budget justification documents, but are not updated on a monthly or even quarterly basis, and are not incorporated into QPR presentations.

V. MANAGING TECHNICAL COMPLEXITY AND PROJECT RISK

Defining EM's Engineering and Technology Function

Several senior EM managers expressed concern that sites fail to implement state-of-the-art technologies, and that lack of coordination across sites produces situations in which similar problems at different sites are solved in different ways. Currently, EM's Office of Engineering and Technology is charged with tracking the development and implementation of technologies across the complex. However, a number of factors, including budget and staffing shortfalls as well as an unclear organizational mandate, have caused the office to focus primarily on providing day-to-day assistance to, and oversight of, EM field sites. Staff interviewed at EM field sites were mostly unaware of any role that the Office of Engineering and Technology plays in coordinating technology development across the EM complex.

The 2007 House Energy and Water Development Appropriations Bill called on DOE to "prepare an EM technology roadmap that identifies technology gaps that exist in the current program, and a strategy with funding proposals to address them," and provided a \$10 million increase in funding over DOE's 2006 budget "to address the technology short-falls identified by" the National Research Council's 2005 report, *Improving the Characterization and Treatment of Radioactive Wastes*.⁶⁹

In April 2007, EM produced a Draft Environmental Management Engineering and Technology Roadmap⁷⁰ that attempts to define the role of the Office of Engineering and Technology within the overall EM program:

The objective of the DOE-EM Engineering & Technology Program is to reduce the technical risk and uncertainty in the Department's clean-up programs and projects. Risks are known technical issues that could prevent project success. Uncertainties are indefinite or unpredictable technical aspects of a project. To reduce those risks and uncertainties, the Program will provide technical solutions where none exist, improved solutions that enhance safety and operating efficiency, or technical alternatives that reduce programmatic risks (cost, schedule, or effectiveness).

The Roadmap further identifies, by projects, programmatic and external reviews, and EM field sites: "the engineering and technical risks the DOE-EM program faces over the next ten years;

⁶⁸ DOE Five Year Plan, FY 2007 – FY 2011, Volume II, Environmental Management, p. 10.

⁶⁹ 2007 Appropriations Bill, House Appropriations Subcommittee on Energy and Water Development.

<<http://thomas.loc.gov/cgi-bin/cpquery/T?&report=hr474&dbname=109&>>

⁷⁰ Available at <[http://www.em.doe.gov/pdfs/DRAFT%20P%20E&T%20Roadmap%20\(04-9-07\).pdf](http://www.em.doe.gov/pdfs/DRAFT%20P%20E&T%20Roadmap%20(04-9-07).pdf)>

the strategies DOE-EM will use to minimize these risks; and the planned outcomes of implementing those strategies.”

In February 2007, the National Academy of Science undertook a project to “provide technical and strategic advice to the DOE-EM’s Office of Engineering and Technology to support the development and implementation of its cleanup technology roadmap.”⁷¹ The study will focus on:

- principal science and technology gaps and their priorities for the cleanup program based on previous National Academies reports, updated and extended to reflect current site conditions and EM priorities and input from key external groups, such as the Nuclear Regulatory Commission, Defense Nuclear Facilities Safety Board (DNFSB),⁷² Environmental Protection Agency, and state regulatory agencies
- strategic opportunities to leverage research and development from other DOE programs (e.g., the Office of Science, Office of Civilian Radioactive Waste Management, and NNSA), other federal agencies (e.g., DoD, Environmental Protection Agency), universities, and the private sector
- core capabilities at the national laboratories that will be needed to address EM’s long-term, high-risk cleanup challenges, especially at the four laboratories located at the large DOE sites (Idaho National Laboratory, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, and Savannah River National Laboratory)
- the infrastructure at these national laboratories and at EM sites that should be maintained to support research, development, and bench- and pilot- scale demonstrations of technologies for the EM cleanup program, especially in radiochemistry

The project is expected to release a formal report sometime around June 2008.

Assessing and Implementing Mature Technologies

In March 2007, GAO issued a report investigating the impact of technological immaturity on cost and schedule overruns for DOE’s “major construction projects,” including some of the most costly projects within EM.⁷³ The report found that:

Of the 12 DOE major projects GAO reviewed, 9 exceeded their original cost or schedule estimates, principally because of ineffective DOE project oversight and poor contractor management. Specifically, 8 of the 12 projects experienced cost increases ranging from \$79.0 million to \$7.9 billion, and 9 of the 12 projects were behind schedule by 9 months to more than 11 years.

⁷¹ Details of the study are available at <<http://www8.nationalacademies.org/cp/projectview.aspx?key=48764>>

⁷² The DNFSB, established in 1988, is an agency charged with oversight of the nuclear weapons complex administered by the U.S. Department of Energy, focusing primarily on issues of nuclear safety, security, and engineering.

⁷³ DEPARTMENT OF ENERGY, *Major Construction Projects Need a Consistent Approach for Assessing Technology Readiness to Help Avoid Cost Increases and Delays*, GAO-07-336, March 2007

The report also found that EM in particular does not systematically place a high emphasis on technological development in assessing project planning:

DOE's Office of Environmental Management (EM) uses a Product Definition Rating Index (PDRI) as a tool to assess how well a project is planned, and whether it is ready to proceed to the next project phase. Project elements rated include cost, schedule, scope/technical, management planning and control, and external factors. Among the 77 project elements rated, 2 involve technology—the identification of technology development requirements, and the testing and evaluation of the technology to be used. While the project technologies are collectively given a ranking with this tool, the PDRI does not represent a rigorous examination of the demonstrated readiness of each critical technology for its application in the project. Furthermore, not all EM projects we examined were using this tool.

Ultimately, the report recommended that DOE “evaluate and consider adopting a disciplined and consistent approach to assessing TRLs for projects with critical technologies.” TRLs, or Technology Readiness Levels, are a metric for quantifying the maturity of a given technology. Originated at NASA and currently in wide use at DoD, TRL allows the rating of technological maturity using a scale of 1 to 9, with a rating of 1 denoting no development beyond the observation of basic technological principles, and a rating of 9 denoting a functioning system operating across the full range of expected conditions. Consequently, a TRL rating of 1 might indicate the need to research and develop an entirely new solution to a technical problem, while a TRL rating of 9 would indicate that some off-the-shelf solution is currently being used successfully in a similar application. While TRL ratings are subjective, GAO staff have indicated that employing TRL would allow EM headquarters and its field offices to “speak the same language” regarding technological innovation and implementation, facilitating greater communication across field sites and potentially paving the way for broader strategic thinking. EM headquarters staff indicate that EM at one point utilized a “gate process,” similar to TRLs, to characterize the maturity of technologies. However, a management decision to focus on accelerating the closure of field sites resulted in a decrease in EM’s technology development budget, and the process was phased out. Academy staff also observed that an informal use of TRL-like assessment criteria is already in place at some field sites. EM staff field sites indicated that the use of TRLs could be advantageous, particularly for the more high-dollar, high-risk, technologically complex projects in the EM portfolio.

In consultation with Academy staff, as well as GAO, EM has taken several steps towards implementation of a Technology Readiness Assessment (TRA) process. In its March report, GAO indicated that DOE “agreed with” the recommendations contained in a draft of their report “but suggested revisions that would allow it to first conduct a pilot application on selected projects to better understand the technology readiness assessment process and evaluate its potential use.” In response, EM has implemented a pilot TRA process. The effort is being led primarily by the Deputy Assistant Secretary for Engineering and Technology. Because the first pilots are focusing mainly on the WTP and associated projects at ORP in Hanford,⁷⁴ the Director of the Office of Project Recovery and the FPD for the WTP also are playing a leadership role. As part of the pilot, staff at ORP developed TRA criteria for WTP, including a TRL scale based on those used by NASA and DoD, but customized for EM projects, which is shown in Table 2 on

⁷⁴ There also is some piloting of TRLs being done at the K-Basins project at the Richland Operations Office, as well as at Tank 48 at the Savannah River Site.

the following page. When Academy staff visited the ORP in April 2007, project and engineering staff at the site were enthusiastic about the effort, and several expressed the belief that its application earlier in the design and engineering of the WTP could have prevented or alleviated some of the engineering and performance setbacks that have occurred.

Some TRA procedures conducted during the Hanford pilot indicated that, because their projects utilize several first-of-a-kind technologies and methods and, therefore, no operating examples or demonstration prototypes of the technologies involved currently exist, they inevitably receive a low TRL rating.

Table 2: DOE Technology Readiness Level Scale for Pilot TRA Process⁷⁵

Relative Level of Technology Development	Technology Readiness Level	TRL Definition	Description
System Operations	TRL 9	Actual system operated over the full range of expected conditions.	Actual operation of the technology in its final form, under the full range of operating conditions. Examples include using the actual system with the full range of wastes.
System Commissioning	TRL 8	Actual system completed and qualified through test and demonstration.	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental testing and evaluation of the system with real waste in hot commissioning.
	TRL 7	Full-scale, similar (prototypical) system demonstrated in a relevant environment.	Prototype full scale system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in a relevant environment. Examples include testing the prototype in the field with a range of simulants and/or real waste and cold commissioning.
Technology Demonstration	TRL 6	Engineering/pilot-scale, similar (prototypical) system validation in a relevant environment.	Representative engineering scale model or prototype system, which is well beyond the lab scale tested for TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype with real waste and a range of simulants.
Technology Development	TRL 5	Laboratory scale, similar system validation in relevant environment	The basic technological components are integrated so that the system configuration is similar to (matches) the final application in almost all respects. Examples include testing a high-fidelity system in a simulated environment and/or with a range of real waste and simulants.
	TRL 4	Component and/or system validation in laboratory environment	Basic technological components are integrated to establish that the pieces will work together. This is relatively "low fidelity" compared with the eventual system. Examples include integration of "ad hoc" hardware in a laboratory and testing with a range of simulants.
Research to Prove Feasibility	TRL 3	Analytical and experimental critical function and/or characteristic proof of concept	Active research and development is initiated. This includes analytical studies and laboratory scale studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative. Components may be tested with simulants.
	TRL 2	Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are still limited to analytic studies.
Basic Technology Research	TRL 1	Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include paper studies of a technology's basic properties.

⁷⁵ Office of River Protection, U.S. Department of Energy. *Technology Readiness Assessment for the Waste Treatment and Immobilization Plant (WTP) Analytical Laboratory, Balance of Facilities, and LAW Waste Vitrification Facilities*. March 2007.

Staff in EM's Engineering and Technology office also have been working with DoD to develop lessons learned that can be incorporated into EM's efforts to begin implementing TRLs and the TRA process. Issues being explored include how to implement the TRA process; how to respond to a finding that a technology is not sufficiently mature to be implemented; who administers the TRA process and who provides oversight of it; and how to produce clear and usable guidance for the TRA process. Ultimately, EM plans to implement a TRA process that operates in concert with elements of the EM project management process, such as CD stages, RMPs, and PEPs.

Anticipating, Planning, and Budgeting for Project Risks

Currently, Congress has placed reprogramming controls on the EM program at the PBS level. In order to move money between PBSs, EM must first obtain congressional approval. EM staff indicated that reprogramming is a difficult and often unwieldy process, and that EM's reprogramming procedure is greatly complicated by delays at the Departmental level and in the Office of Management and Budget approval process. However, discussions with EM staff have not revealed any instance where reprogramming resulted in substantial setbacks to a project. One senior EM manager indicated that the already low congressional thresholds for reprogramming have prompted more EM headquarters project oversight by requiring them to investigate the events that lead to any reprogramming request from the field. The House Energy and Water Development Appropriations Subcommittee has expressed a desire to lower the dollar thresholds at which congressional authorization is required to reprogram appropriated funds.⁷⁶

Order 413.3A states that assessments of the risk associated with project execution "should be performed as early as possible in the project life cycle and should identify critical technical, performance, schedule, and cost risks," and that "once risks are identified, sound risk mitigation strategies and actions should be developed and documented." Risk assessments should begin during the definition phase of a project, between CD-0 and CD-1, and a formal RMP should appear as part of the PEP required at the beginning of the execution phase, immediately after CD-1.⁷⁷ IPTs are responsible for ensuring that RMPs are revised to reflect changing conditions as project work moves forward. They do this in part by relying on an established set of "trigger" questions used to identify risks both internal (e.g., contractor performance) and external (e.g., funding issues) to the project.

Project risks are assessed by first determining the risk elements of a given project or acquisition—those elements of the project that could potentially jeopardize the baseline cost, schedule, or scope of the project. Each risk element is evaluated in terms of the likelihood of occurring, as well as the consequences should the risk materialize. EM then employs Monte Carlo simulation, a technique used to determine the probability distribution of the total cost and/or duration of a project based on subjective assignments of probability distributions to

⁷⁶ Currently, EM must seek congressional approval to reprogram over \$5 million of its Defense Environmental Cleanup appropriation and over \$2 million of its Non-Defense Environmental Cleanup appropriation.

⁷⁷ Order 413.3A delineates four phases of project work—initiation, definition, execution, and transition/closeout—with certain requirements having to be met before a "critical decision" to move from one phase to the next can be formally reached.

individual work packages or activities. The consequences of various risks are evaluated by relying on contractor estimates of the likely costs should a given risk materialize.

Ultimately, assessments of the likelihood and consequences associated with risks are matrixed to produce an overall “Risk Level” rating, as depicted in Figure 6. This rating can then guide the formulation of an appropriate risk mitigation strategy, including strategies for dividing financial responsibility for risk between the contractors, federal staff, and a pool of “unfunded contingency,” which is discussed below.

Figure 6: Reproduction of “Risk Level” Matrix from DOE Manual 413.3-1, Fig. 14.2

Likelihood or Probability of Occurrence	V. Likely	Low	Moderate	High	High	High
	Likely	Low	Moderate	High	High	High
	Unlikely	Low	Low	Moderate	Moderate	High
	V. Unlikely	Low	Low	Low	Low	High
		Negligible	Marginal	Significant	Critical	Crisis
Impact or Consequence of Occurrence						

Interviews with FPDs indicated that they update their RMPs regularly, and that the plans are a valuable resource in tracking and responding to projects risks as well as documenting risk mitigation strategies. However, many FPDs expressed frustration with the lack of a cost estimation capability internal to EM’s federal staff, which can prevent FPDs from obtaining accurate independent assessments of the costs associated with anticipated risks.

For all projects, EM calculates the probable costs associated with mitigating project risks by performing Monte Carlo simulations, as described above. For line-item construction projects in its portfolio, EM then provides funds to meet risks at least at an 80 percent confidence level—that is, EM calculates the level of funds needed to mitigate all identified project risks under at least 80 percent of reasonable scenarios—and requests these funds from Congress. Operating and cleanup projects, however, are funded at only a 50 percent confidence level, with the difference between the amount of money needed to fund a project at a 50 percent confidence level versus an 80 percent confidence labeled “unfunded contingency.” This amount is not included in project baselines for operating and cleanup projects, and so is not included in the life-cycle cost (LCC) of projects as reported to Congress. However, according to EM headquarters managers, Congress has been informed of this practice via formal testimony as well as informal staff discussions, and is informed on a monthly basis of potential cost overruns and surpluses on EM’s various projects.

Should a project risk materialize that has a financial impact greater than the funding allotted at a 50 percent confidence level, EM generally responds either by moving funds from one project to another, within reprogramming limits, or by extending the schedule of that work into future fiscal years when additional funding can be requested. According to EM headquarters managers,

the nature of operating and cleanup projects makes delaying such work more practically feasible than it would be for construction projects.⁷⁸

Operating and cleanup projects generally have a lifespan many years beyond that of line-item construction projects. According to one headquarters manager, funding all EM cleanup and operating projects at an 80 percent confidence level, i.e., funding all of EM's "unfunded contingency," would require between \$800 million and \$1 billion in additional annual appropriations, a nearly 18 percent increase over the approximately \$5.7 billion appropriation EM has requested from Congress in FY 2008. EM managers argue that Congress would not support funding EM operating projects at an 80 percent confidence level from year to year. If project contingencies did not materialize, the carry over of funds from year to year would be too great. However, the Senate version of the 2008 Energy and Water Development Appropriations Act recognizes that EM "is only requesting sufficient funding to provide a 50 percent confidence that the objectives (cost, scope, and schedule) of its projects will remain unchanged," and notes that "the Department's effort to complete clean up in the future will be challenged by the failure to request sufficient funding...It is not enough to simply fund projects that have the greatest perceived reduction to public risk; the Department committed to the public that it would meet regulatory agreements too. The Committee expects future funding requests to include sufficient funding to meet that commitment."⁷⁹

EM managers also point out that, because operating and cleanup projects typically encompass a number of disparate elements (e.g., subprojects, facility operations), EM's reliance on unfunded contingency rests on the assumption that cost overruns in one area can be offset by surpluses in another, with overall funding balancing out over the long term. While Academy staff were unable to find an example where unfunded contingency resulted in an inability to mitigate project risks, EM was likewise unable to cite any empirical data indicating that funding operating and cleanup projects at a 50 percent confidence level does, in fact, produce a balance between shortfalls and surpluses in the long term.

One FPD did note that the opportunity to at least document the risks relegated to unfunded contingency placed him on a sure footing to request funding when such risks materialized. Overall, however, the practice of relying on unfunded contingency was cited by several FPDs as impeding their ability to implement meaningful risk mitigation strategies. They reported not feeling adequately prepared to deal with the consequences of anticipated risks materializing, regardless of their inclusion in a formal RMP. Some EM headquarters officials have likewise indicated that the practice of relegating project risks to unfunded contingency is disadvantageous from a purely budgetary point of view, although in some cases the practice may provide leverage for forcing contractors to produce more aggressive project baselines.

Several senior EM officials expressed agreement with the notion that the 50 percent funding level should be reexamined, and staff on the House Energy and Water Development

⁷⁸ While a facility undergoing construction cannot be simply left incomplete until more funding is available, tasks such as remediating groundwater or producing nuclear fuel can be stopped and restarted once needed funding is provided. EM headquarters managers have acknowledged, however, that such a strategy does entail increased security and maintenance and other costs during periods of inactivity.

⁷⁹ S. Report 110-127. *Energy and Water Development Appropriations Act, 2008.* p. 164.

Appropriations Subcommittee also expressed a desire to see the results of such an evaluation. While no formal framework for such a study has been proposed, EM officials indicate that it could be conducted based on analyzing past project baselines and reprogramming requests.

VI. POLICIES AND GUIDANCE FOR EM'S SAFETY AND QUALITY ASSURANCE PROGRAMS

Safety Policies and Guidance

EM's safety regime, which encompasses both nuclear and industrial safety, is governed by a number of DOE directives. One of the most important directives is DOE Order 420.1B, *Facility Safety*,⁸⁰ which "establish[es] facility and programmatic safety requirements for DOE facilities, including nuclear and explosives safety design criteria, fire protection, criticality safety, natural phenomena hazards mitigation, and the System Engineer Program." The implementation of these requirements is governed by DOE Policy 450.4, *Safety Management System Policy*,⁸¹ which outlines the DOE Integrated Safety Management System (ISMS), "a formal, organized process whereby people plan, perform, assess, and improve the safe conduct of work."⁸² The objective of ISMS is to ensure that federal and contractor staff systematically integrate safety considerations into management and work practices at all levels. The overall management of safety functions and activities is seen as an integral part of mission accomplishment. ISMS is applicable to all facility life-cycle phases, including design, construction, operation, and decontamination and decommissioning.

Worker safety and industrial health are further governed by Federal Rule 10 CFR 851,⁸³ compliance with which was made mandatory in February 2006 for all contractors and subcontractors that "have responsibilities for performing work at a DOE site in furtherance of a DOE mission." Staff in the EM Safety Management and Operations Office indicate that EM has successfully obtained DOE approval of its contractors' compliance with the rule.

Prompted in part by DNFSB, EM is taking steps to increase its attention to the integration of nuclear safety concerns into the design of nuclear facilities. In July 2006, the COO issued a memorandum stating that "varying interpretations exist of how to properly implement certain safety design criteria that flow from" *Facility Safety* and associated guidance documents, and declaring EM's intention to develop DOE Standard 1189, *Integration of Safety into the Design Process*, to address this issue. The memorandum also included an interim guidance document that will govern the integration of nuclear safety into facilities design until Standard 1189 is finalized, which is expected to occur in late 2007 or early 2008. As noted earlier, EM has been investigating the use of TRLs in order to assess the maturity of various technologies in a

⁸⁰ For full text and other information: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/420/o4201b.html>>

⁸¹ For full text and other information: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/450/p4504.html>>

⁸² The ISMS itself is further explained by DOE Manual 450.4-1, *Integrated Safety Management System Manual*.

For full text, see: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/450/m4504-1.html>>

⁸³ For full text: <<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=b999da149606efd38caf69c7d04d2892&rgn=div5&view=text&node=10:4.0.2.5.30&idno=10>>

standardized way across the complex, and ORP has begun piloting a TRA process for WTP and other projects at the Hanford Site.

Quality Assurance Policies and Guidance

Quality assurance (QA) is governed primarily by DOE Order 414.1C, *Quality Assurance*,⁸⁴ which defines standards and rules for QA programs throughout the DOE complex. The order also incorporates Federal Rule 10 CFR 830 Subpart A,⁸⁵ which “establishes quality assurance requirements for contractors conducting activities, including providing items or services, that affect, or may affect, nuclear safety of DOE nuclear facilities,” as well as American Society of Mechanical Engineers (ASME) and ANSI standards for nuclear and non-nuclear applications. As shown in Figure 7 on the following page, Order 414.1C includes 10 broad areas—Program; Personnel Training and Qualification; Quality Improvement; Documents and Records; Work Processes, Design; Procurement; Inspection and Acceptance Testing; Management Assessments; and Independent Assessments—and assigns QA responsibilities at the Deputy Secretary, Secretarial Officer, field manager, and contracting officer levels, as well as in some specific offices, such as the Assistant Secretary for Health, Safety and Security and the Director of the Office of Aviation Management.⁸⁶ While ultimate responsibility for QA lies with federal DOE staff, Order 414.1C does include a contractor requirements document. However, the contents of this are largely duplicative of the overall Order, and so there is no clear division in practice between federal and contractor responsibilities for QA. Many of the 10 QA criteria require federal staff and contractor staff to work in concert in order to maintain compliance.

⁸⁴ For full text and further information: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/414/o4141c.html>>

⁸⁵ For full text: <<http://ecfr.gpoaccess.gov/cgi/t/text{text-idx?c=ecfr&sid=b999da149606efd38caf69c7d04d2892&rgn=div5&view=text&node=10:4.0.2.5.26&idno=10#10:4.0.2.5.26.1}>>

⁸⁶ EM’s internal Quality Assurance Program Plan separately identifies 18 QA criteria for application specifically to projects that must comply with the ASME Standard NQA-1-2004: Organization; Quality Assurance Program; Design Control; Procurement Document Control; Instructions, Procedures, and Drawings; Document Control; Control of Purchased Items and Services; Identification and Control of Items; Control of Special Processes; Inspection; Test Control; Control of Measuring and Test Equipment; Handling, Storage, and Shipping; Inspection, Test, and Operating Status; Control of Nonconforming Items; Corrective Actions; Quality Assurance Records; and Audits.

Figure 7: Quality Assessment Criteria in DOE Order 414.1C, *Quality Assurance*

- | | |
|---|---|
| (1) <u>Management/Criterion 1—Program.</u> | (a) Establish an organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing work.
(b) Establish management processes, including planning, scheduling, and providing resources for work. |
| (2) <u>Management/Criterion 2—Personnel Training and Qualification.</u> | (a) Train and qualify personnel to be capable of performing assigned work.
(b) Provide continuing training to personnel to maintain job proficiency. |
| (3) <u>Management/Criterion 3—Quality Improvement.</u> | (a) Establish and implement processes to detect and prevent quality problems.
(b) Identify, control, and correct items, services, and processes that do not meet established requirements.
(c) Identify the causes of problems, and include prevention of recurrence as a part of corrective action planning.
(d) Review item characteristics, process implementation, and other quality-related information to identify items, services, and processes needing improvement. |
| (4) <u>Management/Criterion 4—Documents and Records.</u> | (a) Prepare, review, approve, issue, use, and revise documents to prescribe processes, specify requirements, or establish design.
(b) Specify, prepare, review, approve, and maintain records. |
| (5) <u>Performance/Criterion 5—Work Processes.</u> | (a) Perform work consistent with technical standards, administrative controls, and hazard controls adopted to meet regulatory or contract requirements using approved instructions, procedures, etc.
(b) Identify and control items to ensure their proper use.
(c) Maintain items to prevent their damage, loss, or deterioration.
(d) Calibrate and maintain equipment used for process monitoring or data collection. |
| (6) <u>Performance/Criterion 6—Design.</u> | (a) Design items and processes using sound engineering/scientific principles and appropriate standards.
(b) Incorporate applicable requirements and design bases in design work and design changes.
(c) Identify and control design interfaces.
(d) Verify/validate the adequacy of design products using individuals or groups other than those who performed the work.
(e) Verify/validate work before approval and implementation of the design. |
| (7) <u>Performance/Criterion 7—Procurement.</u> | (a) Procure items and services that meet established requirements and perform as specified.
(b) Evaluate and select prospective suppliers on the basis of specified criteria.
(c) Establish and implement processes to ensure that approved suppliers continue to provide acceptable items and services. |
| (8) <u>Performance/Criterion 8—Inspection and Acceptance Testing.</u> | (a) Inspect and test specified items, services, and processes using established acceptance and performance criteria.
(b) Calibrate and maintain equipment used for inspections and tests. |
| (9) <u>Assessment/Criterion 9—Management Assessment.</u> | (a) Ensure that managers assess their management processes and identify and correct problems that hinder the organization from achieving its objectives. |
| (10) <u>Assessment/Criterion 10—Independent Assessment.</u> | (a) Plan and conduct independent assessments to measure item and service quality and the adequacy of work performance and to promote improvement.
(b) Establish sufficient authority and freedom from line management for independent assessment teams.
(c) Ensure that persons conducting independent assessments are technically qualified and knowledgeable in the areas to be assessed. |

QA is applied explicitly to projects by DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*,⁸⁷ which locates responsibility for “planning and implementing a Quality Assurance Program for the project” at the FPD level. Order 413.3A also

⁸⁷ For full text and further information: <<http://www.directives.doc.gov/pdfs/doe/doetext/neword/413/o4133a.html>>

notes that QA “begins at project inception and continues through the project’s life cycle... [and] affects cost, availability, effectiveness, safety, and performance.”

Quality and Standards Assurance Office Responsibilities

According to the Quality and Standards Assurance office’s mission and functions statement, the office has the following 10 major areas of responsibility:

1. developing a comprehensive standard review plan with clear criteria and lines of inquiries to enable an effective, in-depth evaluation of the various pre-requisite activities for the critical decisions consistent with the DOE project definitions to ensure that all pertinent safety, QA, and technical requirements and standards are adequately implemented
2. planning and conducting technical reviews and evaluations to identify potential significant issues in a proactive manner to prevent or mitigate project risks
3. developing and implementing a Construction Readiness Review process for major construction projects
4. implementing an EM Corporate Quality Council and a QA evaluation program to focus on institutionalizing the integration of quality into projects and operating facilities similar to how the Department’s Integrated Safety Management System has evolved
5. in coordination with other EM headquarters organizations and in consultation with DOE’s Chief of Nuclear Safety, developing and implementing an effective review program for initiating, planning, and executing major decontamination and decommissioning (D&D) projects. Providing direction, guidance and technical assistance for headquarters reviews of the key D&D project planning documents; facility/system walk downs; configuration management and controls; and surveillance and maintenance programs.
6. directing the identification of nuclear safety, facility and system design/engineering, and operational vulnerabilities, and conducting analyses necessary to cause a prompt resolution or effective path forward for correcting identified issues. Assuring timely implementation of the EM interim guidance and/or DOE Standard on Integration of Safety into Design by assessing design and engineering programs and processes used in the field.
7. assessing IPT capabilities to ensure adequate technical expertise and resources are available to successfully oversee contractors’ performance in all phases of project planning and execution
8. directing and supporting the review of various project planning and execution documents and acquisition strategies to ensure appropriate environmental safety and health and quality requirements and standards are in place
9. interfacing with DNFSB, DOE field elements, other Program Secretarial Offices, and stakeholders on matters concerning quality assurance
10. establishing a high-level waste QA program at headquarters; interfacing/coordinating with the Office of Civilian Radioactive Waste Management (RW) and the affected EM sites to ensure conformance to the waste quality assurance requirements of RW; and leading the associated headquarters audits and evaluations

VII. TRAINING AND CERTIFYING FEDERAL PROJECT DIRECTORS

Certification requirements for FPDs are spelled out in Chapter IV of DOE Order 361.1A, *Acquisition Career Development Program*,⁸⁸ which documents the DOE PMCDP. OECM coordinates the PMCDP, and a DOE-level Certification Review Board approves candidates for certification as FPDs. A key feature of the PMCDP is its graded approach. It establishes four levels of FPD certification, each with increasingly rigorous requirements in the areas of knowledge and skill requirements; training courses; experience or developmental assignments and activities; and behavioral factors. Each certification level ultimately determines the total project cost (TPC)⁸⁹ of projects an FPD may manage. Level 1 FPDs are able to manage projects with a TPC between \$5 and \$20 million; Level 2 FPDs are able to manage projects with a TPC between \$20 and \$100 million; Level 3 FPDs are able to manage projects with a TPC between \$100 and \$400 million; and Level 4 FPDs are able to manage projects with a TPC exceeding \$400 million.⁹⁰

The certification program was announced and made mandatory in April 2004. According to OECM, as of February 2007, 100 percent of EM FPDs had some level of certification, and 69 percent of those responsible for operating expense-funded cleanup projects were certified to a level commensurate with the TPC of the work they managed.⁹¹

EM has announced plans to enhance PMCDP training for all new Level 1 candidates by:

1. adding a requirement for completion of 24 hours of formal training, such as the DOE Hazardous Waste Operations and Emergency Response Training course
2. working with OECM to develop a module on EM case studies suitable for inclusion in the Level 1 Acquisition Strategy course
3. working with OECM to include introductory-level definitions of EM cleanup projects, baselines, and CD processes to the Level 1 core curriculum

⁸⁸ For full text: <<http://www.directives.doe.gov/pdfs/doe/doetext/neword/361/o3611a.html>>

⁸⁹ TPC is defined by DOE Guide 430.1-1, Chapter 6, as “all costs specific to a project incurred through startup of a facility, but prior to the operation of the facility.”

⁹⁰ An FPD certification only determines the TPC range that a certified FPD may manage. Actual assignment to manage specific projects occurs subsequent to, and separately from, this process.

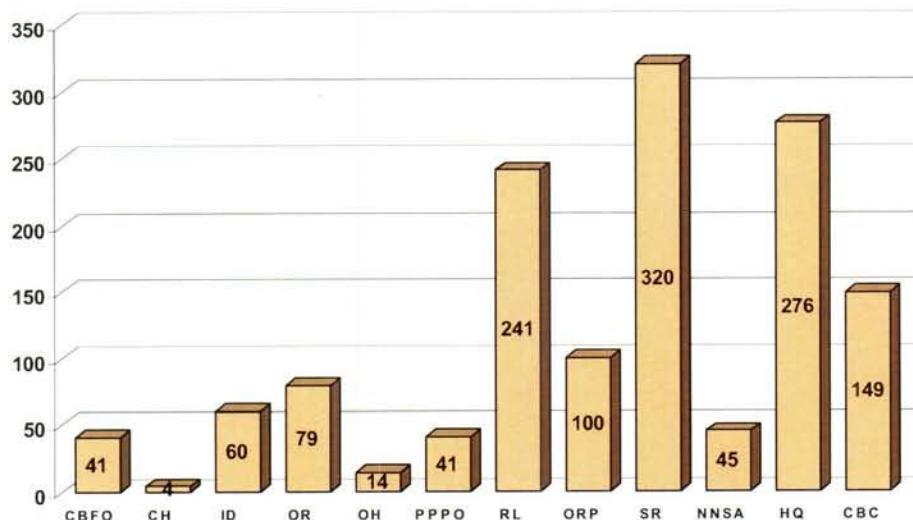
⁹¹ OECM evaluations of FPD certification distinguish between operating expense-funded cleanup projects and line-item construction projects. All of EM FPDs are certified to the correct level in the latter category, but these make up only about nine percent of the total EM project portfolio that is past CD-1.

HUMAN CAPITAL MANAGEMENT

I. EM WORKFORCE PROFILE

Based on August 2007 data,⁹² the EM workforce was 1,370 strong. This onboard strength represents a 45.2 percent decrease from EM's 2001 workforce of 2,500. Figure 1 below illustrates how the EM workforce is distributed between headquarters and the field.

Figure 1: EM Workforce by Site*

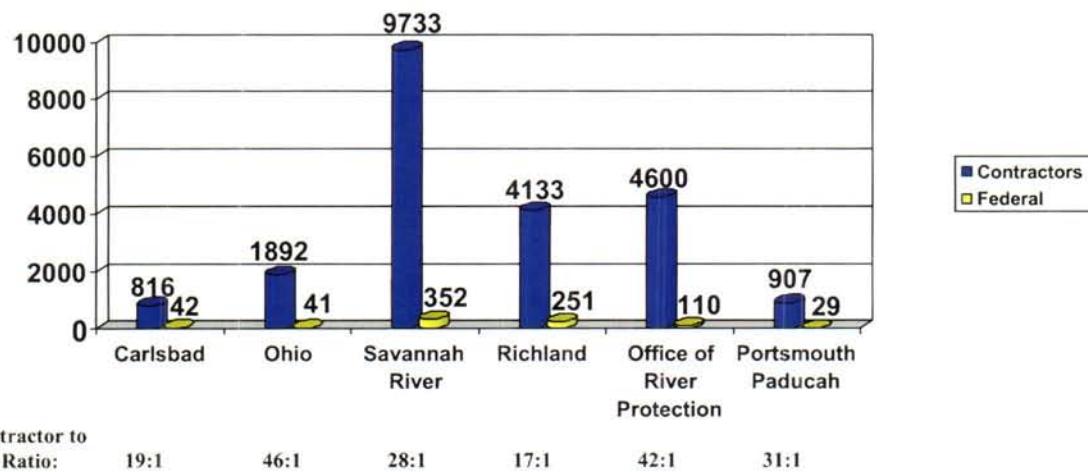


*Abbreviations: CBFO—Carlsbad Field Office; CH—Chicago; ID—Idaho Operations Office; OR—Oak Ridge; OH—Ohio Field Office; PPPO—Portsmouth/Paducah Project Office; RL—Richland Operations Office; ORP—Office of River Protection; SR—Savannah River; NNSA—National Nuclear Security Administration; HQ—Headquarters; CBC—Consolidated Business Center. Non NNSA-owned small sites are included in the HQ numbers.

Federal Staff/Contractor Staff Ratios

Developing and maintaining acquisition and project management competencies throughout the complex is a key management challenge for EM. One indication of the demands EM's large contractor workforce places on its federal workforce is the contractor-to-federal staff ratio, which ranges from a low of 17 to 1 at the Richland Operations Office to a high of 46 to 1 in the Ohio Field Office. Figure 2 presents a comparison of contractor to federal staff strength for several EM sites.

⁹² The data in this section were taken from EM's October 2007 draft Human Capital Management Plan.

Figure 2: Federal Staff versus Contractor Staff at EM Sites

Current Workforce Demographics

Age Distribution

Like most federal agencies, EM has an older workforce. The average age of EM employees is 54.4 years old and the average length of federal service is 20.4 years. Approximately 22 percent of the EM workforce is eligible to retire immediately; and 40.3 percent is eligible to retire in 5 years. Table 1 shows the projected retirements by organization for 2007 through 2012.

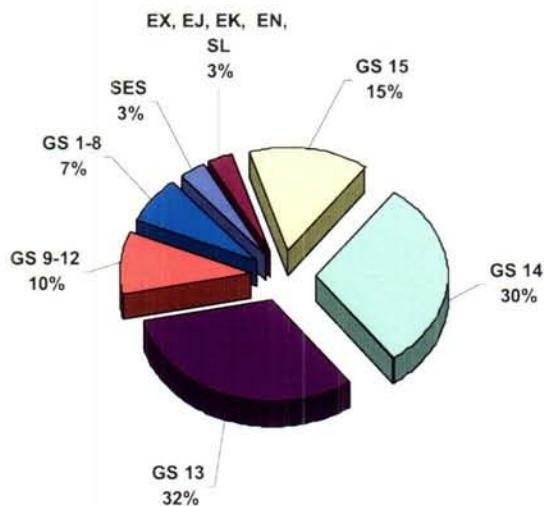
Table 1: Projected Retirements by Fiscal Year and EM Organization

EM Organization	2007		2008		2009		2010		2011		2012	
	Eligible to Retire	Project to Retire										
HQ	59	28	16	8	15	8	17	9	20	10	8	16
NNSA	8	3	1	0	4	0	1	2	1	1	1	6
CBFO	6	2	3		2	2	3	1	4	3	4	2
CBC	13	4	6	1	4	1	9	3	7	5	5	6
ID	3	2	6		1	1	2		5	5	4	1
OR	15	6	3	2	5	1	7	1	5	5	1	7
CH							1		1			1
OH			1				1					1
PPPO	3	1		1	1		2			1		
RL	42	10	8	8	9	8	11	10	16	5	6	9
ORP	15	5	4	1	4	4	6	5	6	3	4	2
SR	70	20	19	5	11	12	15	17	11	16	11	15
Total	234	81	67	26	56	37	75	48	76	54	45	65

Grade Distribution

Over 80 percent of the EM workforce is graded (in its various General Schedule (GS), Senior Executive Service (SES) and/or specially-authorized pay plans) at or above the GS-13 or equivalent level. Fifty-one percent of employees are at the GS-14 level or above. Figure 3 shows the percentage of employees in each grade level.

Figure 3: Percentage of Employees in Each Grade Level



Gender and Diversity Distribution

The EM workforce is 61 percent male and 39 percent female, as compared to 56 percent and 44 percent, respectively, government wide.⁹³ The workforce consists of 75.5 percent non-minorities, 12.3 percent African Americans, 5.4 percent Hispanics, 4.8 percent Asian Pacific Islanders, and 2 percent Native Americans or Alaskan Natives. With the exception of Hispanic representation, these statistics compare favorably with the nationwide Civilian Labor Force (CLF) statistics based on the 2000 Census data.⁹⁴

II. EM'S HUMAN CAPITAL/HUMAN RESOURCES DELIVERY CONFIGURATION

EM staff receive human resources (HR) support from several different offices. Table 2 on the following page shows several of EM's sites, the servicing organization, and the servicing ratios at those sites.

⁹³ Federal Civilian Workforce Statistics, *The Fact Book*, 2005 Edition.

⁹⁴ Hispanic representation in the nationwide workforce is 12.6 percent.

Table 2: EM Human Resources Service Ratios

DOE Organization	Site	Servicing Arrangement	HR Servicing Ratios*
Headquarters	DOE Headquarters	Cross-serviced	1:82
EM	RL/ORP	Direct	1:34
EM	SR	Direct	1:35
EM	EMCBC & EM-owned small sites	Direct	1:26
Nuclear Energy	ID	Cross-serviced	1:40
Office of Science	OR	Cross-serviced	1:80
NNSA	NNSA sites where EM has a workforce.	Cross-serviced	Not reported

*EM servicing ratios are based on an April 2007 Human Resources Information Systems data run. Ratios for Science and Nuclear Energy sites were provided by those sites' HR directors. NNSA HR directors were not interviewed as part of this study, so the NNSA ratio is not provided.

III. WORKLOAD PLANNING AND STAFF ALLOCATION

In its January 2006 Observations Paper, the Panel noted that the absence of a workload measurement and planning system in EM presents human capital (HC) vulnerability for the organization and fails to comply with the Committee on Defense Authorization's direction for objective-based analysis. Absent such a system, there was evidence that EM hiring was overly driven by factors such as budget; A-76 studies; and political and EM leadership decisions. In response to the Panel's observations, EM asked the Academy to conduct benchmarking reviews on workload planning approaches from which EM might benefit. The following section first provides details regarding the composition and distribution of the current EM workforce. Next, it summarizes the benchmarking data collected by the Academy staff. Finally, it shows what EM's staffing would be using the benchmarking organizations' workload planning factors.

EM Occupational Distribution

Table 3 provides details on the distribution of mission-oriented occupations within the EM workforce. EM's predominant mission occupations include:

1. general management, including positions such as project management, management/program analysis, project controls, project support, etc.
2. engineering
3. physical science

Within these mission occupations, there are variations in the rate that field sites utilize these occupations. For example, ORP and Oak Ridge utilize engineers at a rate substantially higher than Savannah River and Richland; and quality assurance specialists are used at CBFO but not

APPENDIX D

elsewhere in the field. In addition, several occupations, which are highlighted in yellow on Table 3, are present but are very marginally represented even though the occupations are arguably significant to EM's mission. For example, though the safety occupation series is not used widely in EM, well-qualified engineers often perform the safety function.

Table 3: Percent of EM Workforce in Mission-Oriented Occupations*

Occupations	HQ	SR	RL	ORP	OR	IDAHO	CBFO	PPPO**	NNSA	Small Sites
Safety	1.1	.003	0	0	1.2	0	0	0	0	0
Environmental Protection	4.5	0	.008	0	0	0	0	7.5	3	0
General Management	34	4.4	13.4	8.1	11	5	18.6	25	20	5
Environmental Science	0	0	0	0	6.2	0	0	0	2	0
Industrial Hygiene	.004	.006	.004	1	0	0	0	0	0	0
Engineering	21	38	35	60.6	55.6	50	30.2	27.5	33	40
Industrial Relations*	0	0	0	0	0	0	0	0	0	0
Physical Science	9.7	12.3	14.3	12	16	28.4	23.3	10	33	35
Facilities***	0	0	0	0	0	6.7	0	0	0	0
Quality Assurance	.004	0	0	0	0	0	7	0	0	0
Transportation	2	.003	.004	0	1.2	1.6	0	0	0	0

Source: April 2007 EM human resources system data extract.

*Excludes EMCBC data as most mission staff are physically located in the field (e.g., the cadre).

**Portsmouth/Paducah Project Office

***Unlike other sites where facility representatives (facreps) are typically engineers, Idaho classifies its facreps in the 1600 (Facilities) occupational group.

Table 4 on the following page summarizes the distribution of EM's support occupations, which include positions performing professional or clerical-level staff support but non-mission work. The yellow highlighting in this table identifies the non EM-owned sites where many administrative services (e.g., HR, legal, financial, etc.) are provided by the landlord, and green highlighting illustrates EM sites that receive much of their administrative support services from either the EMCBC or another EM site. In examining the percent of administrative support, it is interesting to note the high rate at which Savannah River uses this type of position as compared to the remainder of EM. It also is notable that IT positions are a very minor portion of the workforce even though their work is very important to accomplishing EM's mission. However, EM does receive some of its IT support from external contractors as a result of an earlier A-76 competition.

Table 4: Percent of EM Workforce in Support Occupations

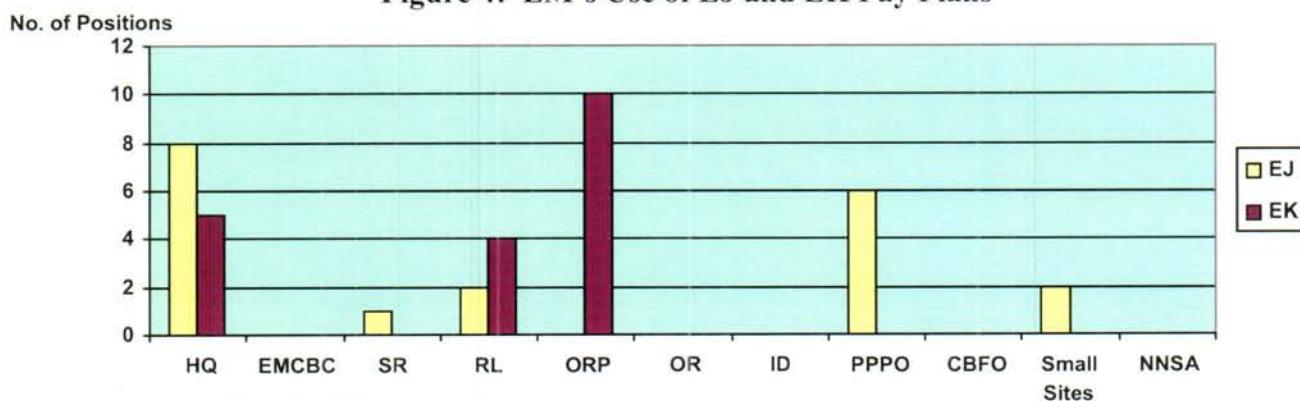
Occupations	HQ	EMCBC*	SR	RL	ORP	OR	ID	CBFO	PPPO	NNSA	Small Sites
Security	5	.009	6	3.4	0	0	0	0	2.5	0	0
Human Resources	0	10.4	3.3	4.2	0	0	0	0	0	0	0
Administrative Support	9	5.2	15	7	3	6.2	8.3	9.3	5	7	14.2
Financial	6	17	8.2	7	2	1.2	0	2.3	2.5	0	0
Legal	0	10.4	3.2	5	2	0	0	2.3	7.5	0	0
Public Information	0	.009	1.3	1.3	2	0	0	2.3	2.5	2	0
Acquisition	6	22	5	9	8.1	1.2	0	4.7	10	0	5
Property/Realty	0	5.2	1.3	.004	1	0	0	0	0	0	0
Library Science	0	0	.003	0	0	0	0	0	0	0	0
Operations Research	.004	0	0	0	0	0	0	0	0	0	0
Training	.004	0	.003	0	0	0	0	0	0	0	0
Information Technology	1.5	.009	2	.004	0	0	0	0	0	0	0

Source: April 2007 EM HR System data extract.

*The EMCBC is EM's centralized provider of administrative services for its small sites. EMCBC data exclude 28 non-Cincinnati duty-stationed employees who perform mission work (e.g., the cadre).

Excepted Service Pay Plan Utilization

EM uses two Excepted Service appointment authorities—the EJ (authorized by the Department of Energy Organization Act for scientific, engineering, professional, technical, and administrative employees) and EK (authorized by the Defense Authorization Act, 1995 for scientific, professional, and technical employees). The former authority is a fairly broad authority and the latter authority applies to work that directly involves defense nuclear safety. These authorities are accompanied by a five-level pay banding system that offers salary rates higher than the GS pay plan and provides compensation comparable to NNSA's unique excepted service authority, which uses the EN pay plan. Figure 4 illustrates EM's current use of the EJ and EK pay plans throughout the complex.

Figure 4: EM's Use of EJ and EK Pay Plans

Source: April 2007 EM HR system data extract

Managers of EM's exclusively GS staff at sites that have an NNSA presence expressed concerns about EM's ability to effectively compete with the salaries offered through NNSA's excepted service pay plan. Even though they have access to recruitment and retention monetary incentives, they did not believe that these alone would be sufficient when competing for hires against NNSA's more favorable pay rate. This concern was particularly true in Los Alamos where the location's geographic remoteness and cost of living was particularly high. In examining EM's use of available, competitive excepted service authorities as reflected in Figure 4, it is significant to note, however, that no EJ or EK positions are established at Oak Ridge, Idaho, CBFO, the NNSA sites, or EMCBC's cadre positions, which are distributed throughout the complex. This poses the question of optimal distribution of EJ and EK authorities (1) across the EM complex, and (2) specifically at the NNSA sites where EM must compete with NNSA's advantageous excepted service pay plan.

Supervisory Ratios

Field interviews, particularly in Richland and ORP, revealed a common concern among many supervisors, team leaders, and subordinate staff—they believe that there are too few supervisory positions in their organizations. Interviewees commented that this led to a number of disadvantages including:

- supervisors whose schedules were so busy they were unable to provide effective and continuous communication (on vision, performance, and organizational awareness issues)
- the inability of non-supervisory staff to gain first-line supervisory experience that would enable them to progress to higher-level management positions
- inappropriate demands on team leaders to act in a “de facto” supervisory capacity
- the inability to provide proper training/mentoring to new hires (including interns and backfills)

Table 5 on the following page summarizes EM's supervisory and team leader ratios. The yellow shading highlights the ratios that have the fewest number of supervisor/team leader positions compared to staff. The EM-wide supervisory ratio is 1:9.3, with headquarters having more supervisors (a ratio of 1:7.15) than the field. The field supervisory ratio is generally at or above 1:9 with the CBFO ratio of 1:5.14 being an exception. Richland, ORP, and EMCBC have the most conservative ratios at 1:10.3, 1:10, and 1:10.9, respectively.

Table 5: EM Supervisory and Team Leader Ratios
 (ratio of supervisors and team leaders to non-supervisory staff)

Site	Supervisory Ratio	Team Leader Ratio
EM-wide	1:9.3	1:16.8
Headquarters	1:7.15	1:235***
EMCBC*	1:10.9	1:21.2
SR	1:9.3	1:19.5
RL	1:10.3	1:10.4
ORP	1:10	1:11.9
OR	1:9.13	1:8.1
ID	1:9.0	1:6.7
PPPO	1:9.0	1:35
CBFO	1:5:14	1:17
Small Sites	1:9.5	1:2.8
NNSA	n/a**	n/a

Source: April 2007 EM HR System data extract

*EMCBC data exclude cadre members who are matrixed to and given daily supervision by client sites.

** Not applicable because EM staff at NNSA sites receive daily supervision by NNSA supervisors.

***Headquarters has only one team leader position.

When asked if their organizations needed to change some of the team leader positions to supervisory positions, interviewees at Richland and ORP consistently commented that it was not possible to do so because they had to meet a 1:15 supervisory ratio requirement. As a result of the National Performance Review⁹⁵ in the early 1990s, the federal government was directed to “flatten organizations,” and many agencies issued guidance on supervisory ratios. However, the Panel is unaware of any continuing supervisory ratio requirements. Rather, the Human Capital Assessment and Accountability Framework, which implements HC aspects of the President’s Management Agenda, stipulates that supervisory ratios, among other measures, should be a continuing component of how agencies assess their organizational economy and efficiency. Inquiries to both DOE and EM HR offices confirmed that there are no specific supervisory ratio requirements other than that offices exercise appropriate economy and efficiency. In fact, EM’s supervisory ratio compares favorably with the most recently reported federal-wide ratio of 1:8.1.⁹⁶

Benchmarking Summaries

Academy staff found four workforce/workload planning methods used by EM that were cited as having an objective approach to determining workforce size and composition for portions of the workforce. Staff also examined three workload forecasting approaches external to EM.

⁹⁵ The National Performance Review was created by President Bill Clinton on March 3, 1993. The final report, *Creating a Government that Works Better and Costs Less*, encouraged agencies to find more effective means of doing government business.

⁹⁶ OPM Fact Book, FY 2005.

Internal Methods

The internal approaches reviewed provide varying degrees of precision. Each approach addresses a portion of the EM workforce; at this time, none of them projects EM-wide staffing requirements.

The first internal approach is the Facility Representative (facrep) Program Requirements,⁹⁷ which is an objective-based methodology for determining facrep staffing that uses factors such as:

- Facility Hazard Value (FHV), which accounts for hazards found at the site and the magnitude of the hazard(s) to the public, workers, and the environment
- Facility Coverage Priority Ranking, which is an adjustment to the FHV based on facility size, material condition, operational complexity, programmatic importance, and operational vigor
- Determination of Facility Coverage, which specifies the recommended level of coverage (i.e., continual, frequent, occasional) and calculates the corresponding level of needed full-time equivalents (FTEs) based on available staff time (accounting for annual available hours per FTE, facrep training time, and time spent performing non-facrep specific duties)

Managers of facrep functions indicated that the program's inclusion of these very specific factors yielded very reliable staffing requirements.

The second internal workforce estimation approach examined is the Federal Technical Capability Program (FTCP),⁹⁸ which is used annually to develop staffing plans that identify technical capabilities and positions needed to ensure safe operations at defense nuclear sites. EM applies the FTCP's workforce estimation methodology to all of its facilities and operational hazards. While the FTCP covers over 30 technical occupations, it does not cover other mission-critical positions, such as EM's acquisition staff. Nor does the FTCP cover other staff support positions, such as legal, financial management, and HR. In the aggregate, about two-thirds of EM's organization-wide positions are not covered by the FTCP. The FTCP's applicability to positions other than those that are aligned with specific facilities also presents challenges. Because the FTCP calculations are driven by facility-specific factors, it requires substantial "informed management judgment" when facility-specific factors, such as facility complexity and size; safety systems; hazards; and risks must be interpreted and applied to positions that are responsible for multiple facilities or to headquarters-level positions.

The third internal approach is Richland's resource planning and allocation approach, which defines site-wide work at the work breakdown structure⁹⁹ level. It requires each manager to project the activity/position-level work for future years using his/her knowledge of previous

⁹⁷ DOE-STD-1063-2006.

⁹⁸ Federal Technical Capability Program policy and guidance are included in DOE Manual 426.1-1A. Facrep staffing is included within the coverage of the FTCP.

⁹⁹ The work breakdown structure is a method of organizing work that consists of dividing each project into its constituent tasks.

workload¹⁰⁰ and judgment regarding how current workload will either increase or decrease over time. Once complete, these projections are reviewed by a Position Management Committee that approves the results and determines local hiring needs and priorities. Richland managers commented that the output from this process had been instrumental in demonstrating a staffing shortfall to headquarters and obtaining approval for additional hiring. This resource planning and allocation approach is not used outside of Richland.

The fourth internal method Academy staff examined is a workload assessment of EM headquarters that was completed in October 2006. For this assessment, DASs and managerial officials for each headquarters organizational entity were asked to project the number of positions required beyond current authorizations. The process for developing these estimates included:

- defining the organization's primary functions and tasks to perform those functions
- identifying the deliverables to be produced and the source requirements for those deliverables
- developing an FTE estimate to fulfill the workload requirements

The estimates were expressed in two forms, with the first being the minimum staffing needed to perform assigned work at a satisfactory level of performance. The second estimate was the staffing required for optimal performance of assigned work. At the time the assessment was conducted, many headquarters offices were still refining their understanding of new/changed responsibilities that resulted from the May 2006 reorganization. Thus, the precision of the data varies depending on that clarity. The projections also are dependent on each DAS'/manager's best estimate of the work level required rather than on specific mathematical formulas.

The resulting projections were reviewed in terms of overall credibility/realism, but were not subjected to more in-depth validation. The aggregated projections suggested a shortfall in the existing EM headquarters staffing ranging from a low of approximately 50 positions to a high of 128 positions. The PDAS used these projections to help determine which organizations' hiring authority should be increased or have higher priority within currently authorized levels, but the data were not used as an input to the FY 2008 budget request.

Currently, EM headquarters is considering using contractor support to expand this approach EM-wide as a means to inform future budget estimates and staffing plans. However, EM officials note that they first must have an appropriate base-level description of field workload on which to develop staffing projections. Academy staff have noted that the process needs to be enhanced with additional rigor prior to expanding it complex-wide.

¹⁰⁰ This method uses a manager's personal knowledge and does not mathematically factor in historical staffing patterns.

External Methods

Academy staff examined the workload planning methodologies used by:

1. the Nuclear Regulatory Commission (NRC)
2. the Naval Facilities Engineering Command (NAVFAC)
3. the Army Corps of Engineers (COE)¹⁰¹

Although no federal organization provides a complete “apples to apples” comparison with the mission and workload of EM, these three organizations’ mission attributes have some similarities to EM’s work, which makes them appropriate for study. The NRC was selected because of its focus on nuclear energy, which involves regulatory oversight of civilian power plants. Both COE and NAVFAC were chosen because of their environmental restoration missions. Although there are similarities between EM and these organizations, there also are major differences that must be factored into any comparisons of workload and staffing.

1. COE, NAVFAC, and EM functions are all complex and involve serious health and safety risks to both the workforce and the public. However, EM’s mission uniquely involves extensive nuclear safety complexities/risk.
2. EM’s projects extend over substantially longer time periods than do NAVFAC and COE projects.
3. The methods COE, NAVFAC, and EM use to carry out their work are not identical, and EM receives more assistance from contractors in carrying out its programs than COE and NAVFAC. It was not possible to develop comparative data that would treat all workload in an identical fashion.
4. Contracting approaches used in these organizations vary substantially and must be accounted for in terms of impact on workforce requirements.

The workload planning methodologies used in these three organizations use mathematical factors that have been developed over time using actual historical experience and have been customized to account for the business practices within the respective organizations. This summary does not attempt to explain the internal mathematical models in these systems, but rather provides a general description of the approaches to show their similarities and differences.

NRC Methodology

The NRC’s workforce planning function is not centralized. Rather, each program office plans its work and develops resource requirements using a common methodology, and a central organization integrates the results. NRC’s workload fluctuates based on requests for licensing and/or licensing amendments for new power plants or increased output from existing power

¹⁰¹ Academy staff selected federal methods to review given their applicability in substantiating staffing/budget needs at the agency, department, Office of Management and Budget, and congressional levels. Selected organizations advised the study team that their projection methods have been very helpful in this regard.

plants. The requested projects can be short- or long-term in nature and generally involve a technical design that is somewhat fixed due to the relative stability in the technologies now used at power plants.

The NRC was able to standardize its business operations into several categories into which it groups incoming requests for work. Using a Standard Review Plan (SRP), which specifies the skills that are needed to perform the respective category of work, the NRC calculates its anticipated staffing needs. Skill sets such as project management, civil engineering, instrumentation and controls, legal, and operator licensing make up over 50 percent of the estimated effort. Seventeen other skill sets make up the remainder. Ultimately, comparing the resulting skill set requirements with budget models translates into the specified FTE requirement for the project.

The NRC first developed the SRP for power reactor licensing in the 1970s and 1980s by examining the work that had been done on various projects over time and then determining the skills needed for the respective project types. Later, the SRP was expanded to include decommissioning and high-level waste. Today, the planning tool also covers major support occupations such as contracting, budgeting, and HR, but does not fully cover more clerical activities.

To support its workload forecasting and other management systems, the NRC maintains detailed records of staff time expenditures down to the specific task level using a commercial, off-the-shelf personnel/payroll system that integrates staff time reports and payroll. Employees input and supervisors verify the data. NRC representatives estimate that the time required for an employee to record this information is less than a half hour a week. NRC officials believe that collecting data at this level enables them to maintain valid information within the SRP.

NRC officials offered advice about implementing a workload planning system similar to theirs. First, they cautioned that an organization's ability to standardize business processes into a manageable number of categories will influence its ability to create accurate SRPs for the work performed. They also noted that the effort requires substantial time to implement, noting that their implementation was not fully systematized until 2002. Finally, the officials stressed that using a system that requires employee input for how work time is expended requires a cultural change, and the workforce must believe that the system will benefit them.

The NRC officials noted that during FY 2006, NRC exceeded its initial hiring goal of 300 new staff by actually bringing 371 employees on board. Generally, 60 to 70 percent of their new professional hires are at the mid or upper levels. Approximately 25 percent of new hires are at the entry level (i.e., individuals with PhDs or Masters Degrees, but new to the workforce). The proportion of interns within the organization's FTE authorization is factored into the productivity model, which predicates overall staffing authority.¹⁰²

¹⁰² NRC information was gained through (1) discussions with NRC's Director, Program Management Policy Development & Planning Staff; Deputy Director, Office of Nuclear Reactor Regulation; and Office of Human Resources staff representatives, March 16, 2007; and (2) GAO NRC Study: *Human Capital Retirements and Anticipated New Reactor Applications will Challenge NRC's Workforce* (GAO-97-105).

COE and NAVFAC Methodologies

While the methodologies used by COE and NAVFAC have differences, they are sufficiently similar to be described together. Within DoD, the universe of environmental cleanup work is prioritized using a “relative risk” assessment process, and the output of that assessment is included in an overall DoD summary referred to as “Measures of Merit.” There also are similar risk-based categories for related work such as military munitions and other programs. Both COE and NAVFAC use relative risk to stratify project workload by level of risk (e.g., high, medium, and low), and this enables DoD and COE/NAVFAC to prioritize the sequencing/budgeting of project work consistent with the assigned priorities.

Like the NRC’s workload planning approach, both COE and NAVFAC apply historical staffing patterns associated with project categories to project future staffing requirements as a percentage of overall project life-cycle costs (LCC).¹⁰³ NAVFAC’s staffing assumptions are based on other factors including installation complexity, number of cleanup sites, and annual program funding levels that are weighted by year, in addition to the LCC or cost-to-complete (CTC). They then translate these individual and multi-year staffing needs into multi-year programming and budget requirements based on the anticipated cost of salary and benefits adjusted for anticipated inflation.¹⁰⁴ Thus, the methodology produces staffing projection requirements for the years covered by the resource allocation plan at the same time as the project’s direct project costs are being developed.

NRC, COE and NAVFAC all rely on a general method of analyzing the constituent tasks underlying a given project, and then using historical experience to translate these into workload projections. At NRC, the factors by which tasks are translated into workload requirements are gleaned from employee-recorded activity-based input. COE and NAVFAC, by contrast, update pertinent factors as they change, including installation complexity (including LCC/CTC and relative risk), number of sites, and weighted annual project funding levels as changes occur. To some degree, the projections articulate FTE requirements at the Department and subordinate command levels, but the projections predominantly apply to project-level work.

As projects transition through the multi-year planning, budgeting, and execution phases, COE and NAVFAC initial estimates are refined. While projections serve as planning guidance for the field and are monitored in terms of consistency in application, the field sites exercise some but not total discretion in terms of how to structure the organizations and positions that will be conducting the actual work. For example, NAVFAC has a standard organization template for its echelon IV (i.e., project execution) commands. Furthermore, decisions such as the concentration of technical expertise are made by the business line in coordination with all echelons of NAVFAC.

¹⁰³ Section 707 of Executive Order 13123 defines life-cycle costs as "...the sum of present values of investment costs, capital costs, installation costs, energy costs, operating costs, maintenance costs, and disposal costs over the life-time of the project, product, or measure."

¹⁰⁴ DoD programming activities estimate requirements for six fiscal years (i.e., four fiscal years beyond the current two budget years), and budget estimate submissions include the prior, current, and subsequent two budget fiscal years.

COE officials noted that one of the lessons the Corps has learned over time is how to avoid staffing creep, caused by such things as duplication of effort and spreading expertise more broadly than necessary. To do this, they examine agency-wide operations and make adjustments in COE-wide staffing and organization structures to meet the changing needs. While COE takes actions on a corrective basis, the COE officials underscored the need to make efficient and economical staffing decisions up front rather than after the fact.¹⁰⁵

COE projects costs and budgets for staffing-related requirements such as reduction costs, retention, recruitment, and relocation allowances as a percentage of LCC based on historical experience. NAVFAC officials noted that to a large degree, they pay these costs using annual hire lag.¹⁰⁶ In general, both organizations' major source of funding for interns comes from departmentally-funded intern programs; however, they do include some limited funding for interns within overall program funding.¹⁰⁷

Application of NAVFAC and COE Factors to EM

Academy staff attempted to apply the NAVFAC and COE workload and FTE forecasting models to EM's current project portfolio. Because COE and NAVFAC projects generally have lower LCCs than EM projects, Academy staff asked those organizations to estimate what their anticipated FTE requirements would be for a representative \$25 million environmental restoration project so that the results could then be extrapolated for comparison with EM's larger LCC projects. Both COE and NAVFAC provided the information requested; however, their planning officials cautioned that the real-life staffing results could differ drastically depending on the acquisition/project execution approaches used, as well as the specific project milestones associated with the actual project phase (e.g., study/design or remediation/construction). With that important caveat, Table 6 summarizes the COE and NAVFAC factors for this notional project.

¹⁰⁵ The COE officials illustrated their experience with the restructuring they found necessary as workload associated with the Hazardous, Toxic, and Radioactive Waste function decreased over time.

¹⁰⁶ Hire lag is defined as current year salary/benefit funding that is not fully utilized due to the lag between position vacancy and fill.

¹⁰⁷ COE information was obtained through discussions with representatives from: the Office of Chief Engineers (OCE) Policy and Planning; OCE Military Programs, Southwestern and Northwestern Division Regional Integration Teams; COE Manpower and Force Analysis Division; and Department of the Army Cleanup Division, April 9, 2007. NAVFAC information was obtained through discussions with representatives from NAVFAC's Environmental, Environmental Cleanup, Resource Management, and Environmental Compliance and Environmental Planning divisions, April 11, 2007.

Table 6: COE/NAVFAC FTE Projections for Notional \$25 Million Project

Question	COE Response	NAVFAC Response
What percentage of the \$25 million would be dedicated to project staffing?	17.7%	10%
What number of FTE would this percentage purchase? ¹⁰⁸	44 FTE	23.5 FTE
Of the overall number of projected FTE, what number would be at organization levels above the project level?	12 FTE	3.25 FTE
Of the overall number of projected FTE, what number would be at the project level?	32 FTE	20.25 FTE
What percentage of the \$25 million would be used for staffing at the project level?	12.8%	8.1%

Next, Academy staff took the project-level staffing percentages that COE and NAVFAC provided—12.8 percent and 8.1 percent, respectively—and applied them against the LCCs of some current EM projects. This produced a total FTE requirement for the project life-cycle, which was then divided by the cost per EM work year (i.e., \$170,000). That result was then spread over 20- and 30-year life cycles (which are typical of many EM projects) to approximate what EM staffing would be if the COE and NAVFAC workload forecasting factors were used. The results are shown on the following page in Table 7.

There are several cautions to this approach. The comparison assumes that EM staffing would be spread evenly over the life cycle of the project. This assumption clearly does not reflect actual EM staffing practices, but it is useful for purposes of comparison. In addition, EM does not project future staffing costs at the same time as it projects future contract costs.

¹⁰⁸ COE and NAVFAC apply labor costs at \$100,000 per FTE.

Table 7: EM Staffing Using COE/NAVFAC \$25 Million Project Scenario for Selected EM Sites

EM Site*	Project LCC (rounded to nearest tenth of billion)	Annual FTE** using COE Staffing Factor (12.8%) with 20-Year LC	Annual FTE** using COE Staffing Factor (12.8%) with 30-Year LC	Annual FTE** Using NAVFAC Staffing Factor (8.1%) with 20-Year LC	Annual FTE** Using NAVFAC Staffing Factor (8.1%) with 30-Year LC	EM FY 2008 FTE***
SR	\$33.9	1276	851	808	538	339
RL	\$23.7	866	595	565	376	245
ORP	\$56.4	2,123	1,416	1,344	896	112
CBFO	\$5.2	196	131	124	83	50
PPPO	\$14.4	542	361	343	229	45
ID	\$7.8	294	196	186	124	67
OR	\$6.0	226	151	143	95	83
LASO	\$1.5	56	38	36	24	6****
NSO	\$2.2	83	55	52	35	30****
LLNL	\$0.12	5	3	3	2	7****
Staffing Totals based on COE/NAVFAC staffing factors	n/a	5,667	3,797	3,604	2,402	984
EM Staffing as % of Benchmarked Totals	n/a	17.4%	25.9%	27.3%	40.9%	n/a

Source: LCC figures from March 2007 EM Quarterly Project Review.

*LASO is the Los Alamos Site Office; NSO is the Nevada Site Office; and LLNL is the Lawrence Livermore National Laboratory.

**FTE cost of approximately \$170K per man-year provided by EM.

***FY 2008 FTE ceilings provided by EM.

**** Assumes matrixing of Albuquerque Service Center staff to augment site staff.

As shown in Table 7, applying the COE and NAVFAC workload forecasting factors produced significantly more FTE for EM sites than are currently provided in FY 2008 FTE authorizations. Even though there are substantial differences between EM and NAVFAC/COE in terms of organizational structure; the nature of their projects; and their approaches to contracting and project management, the discrepancies cannot be totally discounted. They also support Panel observations made during the course of this study that several occupations appear to be understaffed, including project control officers and cost-price analysts. There also are indications of possible understaffing in several other areas, including quality assurance oversight, acquisition, and contract administration. The data presented above, together with a constant drumbeat of criticism from GAO, the DOE Inspector General, and congressional sources, indicate that this is an area that calls for examination. A number of areas would have to be researched, however, before it would be possible to make a more direct comparison of EM staffing with that of COE and NAVFAC, such as:

- which functions COE and NAVFAC have retained internally that EM performs using contractors
- which functions are performed for COE/NAVFAC and EM by others (e.g., landlord sites) on either a cost-free or reimbursable basis
- the degree to which staffing is influenced by EM's contracting approaches
- the degree to which the workforce grade/cost structure (i.e., estimated at \$170,000/work year in EM and \$100,000/work year in COE/NAVFAC) influences productivity
- the degree to which EM is satisfied that its current project management approaches are enabling it to optimally meet mission requirements
- the degree to which EM productivity may be a byproduct of workforce underutilization versus actual understaffing
- a range of other pertinent workload forecasting factors

IV. HUMAN CAPITAL COMPETENCE

Despite the generous number of staff allocated to the EM's Human Capital and Human Resources and Information Technology Offices by the May 2006 reorganization, the staff initially assigned to those offices did not have strong technical backgrounds in the HC/HR areas. The positions that were filled with employees who had HC/HR backgrounds are shaded in gray in Table 8 below.

Table 8: Staffing for EM Headquarters HC/HR Offices

Headquarters HR & IT*	HC Planning
1—GS-15 Supervisory Management Analyst	1—GS-15 Program Analyst (Detailee)
1—GS-14 Management Analyst	3—GS-15 Physical Scientist & Other Technical Background Staff
1—GS-14 Team Lead Management Analyst	2—GS-14, Technical Background
1—GS-13, Administrative Officer	1—GS-14, HR Background
1—GS-13, Administrative Officer	1—GS-13, Management Analyst
1—GS-13, Administrative Officer	1—GS-7, Program Assistant
5 Total Non Supervisory Staff (Note: Supervisor expends part-time effort over this function)	8 Total Non Supervisory Staff On Board, 12 Authorized

*Excludes staffing for Information Technology.

V. EM COMPETENCY ASSESSMENT

Throughout this study, Academy staff asked EM supervisors and staff questions about staff competency and training. Staff were asked to respond to the questions shown in Figure 5 on the following page using a scale of one to five, with five being the highest.

Figure 5: Competency Assessment Questions Posed to EM Supervisors and Staff

Supervisory Questions
<ol style="list-style-type: none"> 1. Rate the degree to which your staff possesses the competencies needed to perform their current assignments. 2. Rate the degree to which your staff possesses the competencies needed to perform duties that may change as a result of known future requirements. 3. Rate the degree to which your staff's competencies provide sufficient bench strength. 4. Provide a numerical rating for the adequacy of specific technical/program training. 5. Provide a numerical rating for the frequency of training/program available. 6. Rate the degree to which technical training is "progressive and sequential." 7. Rate the adequacy of supervisory/managerial/leadership training.

Non-Supervisory Staff Questions
<ol style="list-style-type: none"> 1. Rate the degree to which you believe you possess the competencies (i.e., specific technical/program knowledge and skills) needed to perform your current assignment? 2. Rate the degree to which you possess the competencies (i.e., specific technical/program knowledge and skills) needed to perform duties that may change as a result of known future requirements. 3. Rate the degree to which you have been prepared through on-the-job and/or classroom training to assume positions of supervision/management/leadership. 4. Rate the adequacy of specific technical/program training you have been provided. 5. Rate the frequency with which such technical/program training has been provided. 6. Rate the degree to which you would characterize this training as "progressive and sequential" (i.e., provided to you throughout your career).

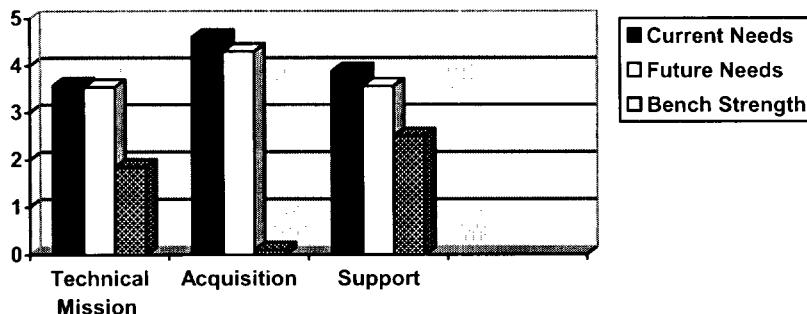
Findings

In its January 2007 Observations Paper, Academy staff tabulated the responses to the questions.¹⁰⁹ Figures 6 and 7 on the following page show the supervisors' perspectives on staff competency and training, respectively. The data are aggregated by three occupational areas:

¹⁰⁹ The data include responses from staff at the Idaho, Savannah River, and Carlsbad sites. Although Academy staff continued to ask the questions at the other sites visited, those responses were not tabulated. However, the responses closely mirrored the responses presented in the data above.

(1) technical mission (e.g., project directors, facility representatives, engineers, etc.), (2) acquisition, and (3) general support (e.g., HR, financial management, public affairs, legal counsel, etc.).¹¹⁰

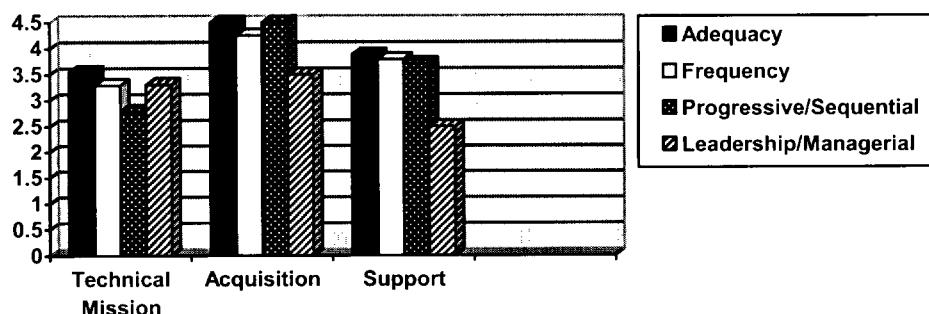
Figure 6: Supervisory Perspective on Competencies by Occupational Area



EM supervisors in all occupational areas saw little difference between the competencies of their staff to perform current versus future work. Although some supervisors of technical staff did envision modest changes in technology and/or work-related techniques, they did not predict radical mission changes that would require significantly different staff competencies. Of the three occupational areas, supervisors regarded the acquisition workforce as the best prepared to meet both current and future work requirements—4.6 and 4.3 out of 5, respectively.

Most notable was the consistently low response to the question about their staffs' bench-strength capacity (2.5 or lower across occupational areas). Although supervisors were asked whether their "staff's competencies provide sufficient bench strength," supervisors consistently couched their responses in terms of staffing levels, i.e., being one-deep to meet workload demands. Supervisors consistently indicated that they have no maneuvering room to meet unexpected emergencies in terms of staff depth. Several supervisors asked, "Can the rating be less than zero?"

Figure 7: Supervisory Perspective on Training by Occupational Area



When asked about training that is currently available to their staff, technical supervisors often commented that while project management training was available, technical training for their

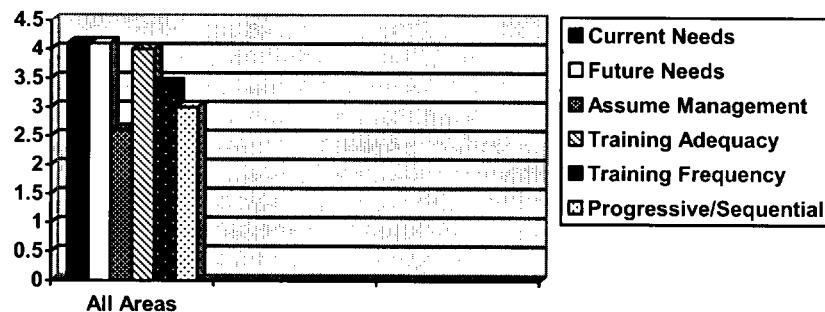
¹¹⁰ Results are aggregated for all locations rather than at a site-specific level because the number of interviews conducted at the various locations was insufficient to provide interviewee anonymity.

mission areas was lacking. For example, where can one obtain training on how to run a salt mine or remediate nuclear waste? The day-to-day issues associated with mission accomplishment, including transportation, remediation, and even interaction with contractors, was more a “learn as you go” proposition. Training was seldom “progressive and sequential.” Rather, you get staff in the door, provide them some initial training, if needed, and then put them on autopilot.

Like the supervisors’ responses on staff competencies, the assessments of training fared better within the acquisition occupational area than in either the technical or support occupations. The major complaint voiced by supervisors across all occupations was that while training was available, staff did not think they could attend training because of workload and bench strength concerns.

Finally, opinions on the adequacy of leadership/managerial training were similar across occupations. Interviewees indicated that various training programs were available (typically through the Office of Personnel Management (OPM) or other contract sources). However, they said that attending such programs was totally at the individual supervisor’s discretion, and that a more systematic approach/program might be needed in EM. Figure 8 shows the responses of the non-supervisory interviewees to the Academy’s competency and training questions.¹¹¹

Figure 8: Staff Perspective on Competencies/Training



In general, the non-supervisory staff’s responses to the Academy’s competency and training questions aligned fairly closely to the average responses of the supervisory staff. They rated their competency levels somewhat higher than the supervisors’ assessment (4.1 compared to the average supervisors’ rating of 3.9). The staff’s rating of the adequacy of their preparation (classroom or on-the-job training) to assume positions of supervision/management/leadership (2.6) was somewhat less than the supervisors’ assessment of the sufficiency of training to prepare staff to assume those positions (3.1). Similar to the supervisors’ rating and comments, the staff said that various technical and managerial training programs were available, but they did not think that they could attend because they were too busy. Staff also agreed with the supervisors that training is not progressive and sequential, and commented that there was little available from a continuing education standpoint.

¹¹¹ Employees’ responses were aggregated across occupational areas because the number of interviews did not permit meaningful categorization within occupational areas.

VI. EMCBC CLOSURE CADRE

Originally, the closure cadre was comprised of individuals who worked at sites that had closed or downsized in preparation for closing. The purpose of the closure cadre was to retain within EM staff with expertise in closure operations who could be reassigned to other sites that were losing expertise as their work drew to a close. Cadre staff also could be assigned to other sites to assist with ongoing work. As staff have left the cadre, the COO has refilled those positions, in some cases with people hired from outside of EM. The COO's office is trying to use cadre personnel, particularly at small sites, to fill critical positions. Academy staff heard from officials at large sites that they rarely seek assistance from the cadre. They are usually looking for permanent staff or people with skills not found among the cadre personnel, such as fire safety engineers. The composition of the cadre as of October 15, 2007 is shown in Table 9.

Table 9: October 15, 2007 Closure Cadre Membership

Position*	Incumbent Location
3—Supervisory Physical Scientist, GS-15	Brookhaven Natl. Lab Oakland <i>Separations Process Research Unit</i>
2—Program Manager, GS-15	Headquarters
2—General Engineers, GS-15	Denver Federal Office
1—Physical Scientist, GS-15	Fernald
2—General Engineer, GS-14	Mound Closure Project Brookhaven Natl. Lab
1—Industrial Hygienist, GS-14	West Valley
1—Technical Information Specialist, GS-14	Denver Federal
6—Physical Scientist, GS-14	<i>Separations Process Research Unit</i> Portsmouth/Paducah (2) Denver Federal Office Moab <i>West Valley</i>
1—Program Analyst, GS-13	Moab
1—General Engineer, GS-13	Mound Closure Project
2—Physical Scientist, GS-13	Denver Federal Office
1—Industrial Hygienist	<i>Savannah River</i>
23 Total	

*Italicized entries indicate competitive selections. Others are internal placements.

VII. SES PERFORMANCE RECOGNITION ISSUES

Interviews conducted during site visits revealed that field staff perceived that headquarters executives' performance and accomplishments receive more favorable cash recognition than do their peers in the field. Academy staff attempted to determine the accuracy of those perceptions.

Department of Energy SES Performance Appraisal Process

Departmental policy and processes reserve authority to the Deputy Secretary for making final determinations regarding DOE executives' level of performance (i.e., appraisal level, pay increases, and bonuses for career SES). Secretarial Officers are authorized to nominate, for the Deputy Secretary's approval, the exemplary performers within their organization whom they believe should be recognized with performance bonuses and/or pay adjustments based on their respective ratings. As Secretarial Officers make their recommendations, they are urged to establish internal processes that will ensure consistency of approach throughout their own organizations. One point to note is that the senior EM site managers who work at facilities where EM is not the landlord—the Oak Ridge Office, which is an Office of Science site, and the Idaho Operations Office, which is a Nuclear Energy site—are not rated by an EM supervisor. Instead, the head of the landlord program office rates them with EM input, if desired. Further, those managers are in the SES performance recognition pools of Science and Nuclear Energy, not EM's pool.

Analysis Methodology

The method used to compare the performance recognition practices for EM senior executives involved:

- determining the number of executive positions in headquarters and field locations in current and prior fiscal years
- determining the types of recognition (i.e., performance and other cash recognition) provided executives during the same period (i.e., for payouts within respective fiscal years)
- determining if the recognition practices differed for (1) headquarters and field, and (2) EM-appraised executives (i.e., direct supervision (DS) sites and non EM-appraised executives (i.e., indirect supervision (IS) sites)
- comparing EM practices to federal-wide and Department-wide practices where appropriate data were available¹¹²

Analysis of EM SES Performance Recognition Fiscal Years 2004-2006

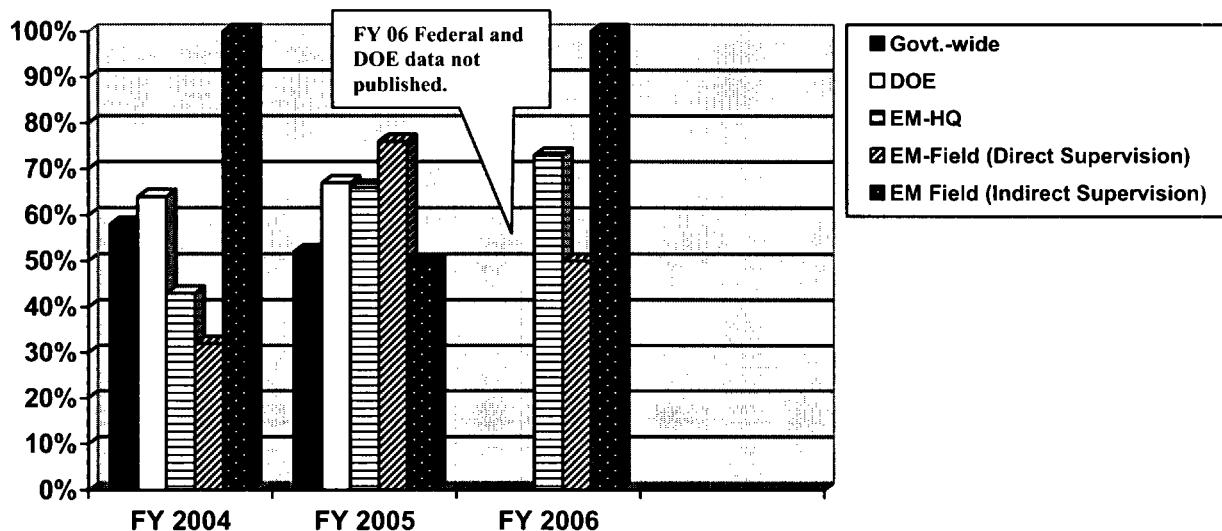
The figures that follow depict the results of the analysis of EM SES performance recognition during fiscal years 2004-2006. Because the population of EM executives is small in numbers (i.e., under 50), the results are aggregated into three organizational groupings—EM headquarters, EM field DS, and EM field IS. The latter two groupings distinguish the executives whose performance is directly rated by EM rating officials and those whose performance and recognition recommendations are made by a non-EM rating official. Though breaking the information down to the individual sites within EM would reveal an additional level of information regarding specific recognition practices, it also would provide very detailed information that could divulge personal information about the various executives. Therefore,

¹¹² The Academy team used data provided by the Deputy Assistant Secretary for HC for FYs 2004-2006.

results are reported as averages rather than actual numbers, and they are not reported at the site level.

Agencies may give career SES performance awards (i.e., bonuses) to recognize and reward excellence over a one-year performance appraisal cycle. Career SES also may be eligible for other cash awards such as Special Act/Service Awards (SA/SA) if requirements of those recognitions are met. SA/SA awards, by contrast to performance awards, are lump sum cash awards that recognize specific accomplishments that are in the public interest and exceed normal job requirements. SA/SA awards can be for individual or group contributions. Because career SES are eligible for both types of recognition, the EM distribution patterns for both are examined below. It should be noted that the Academy review of EM's SES performance recognition patterns does not constitute an audit of the individual actions. Therefore, this review forms no conclusions regarding the appropriateness of individual recognition actions. The Academy staff's review was for the purpose of pinpointing systemic issues that might merit follow-up action.

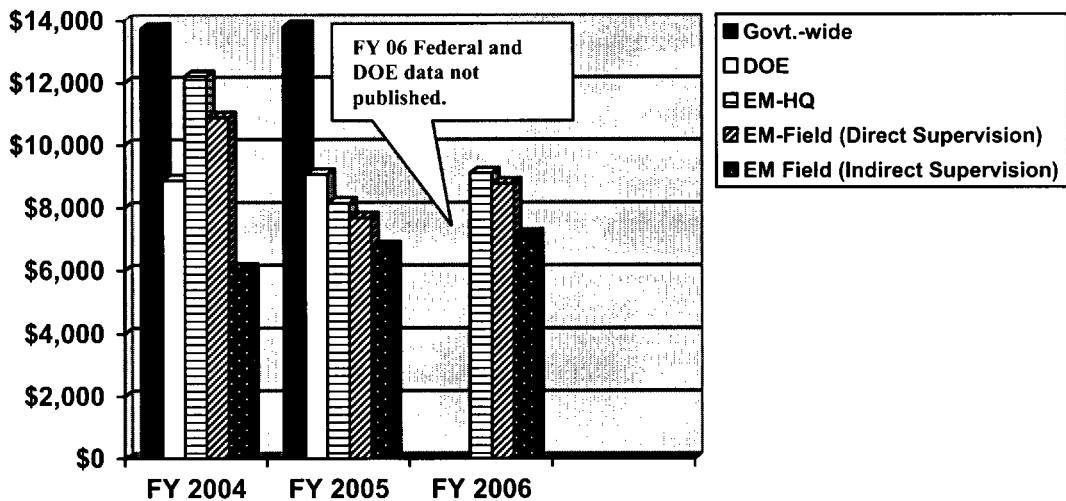
Figure 9: Percentage of Executives Given SES Performance Awards by Organization FY 2004-2006 Pay Outs



Source: EM data from the Office of Human Capital and Business Services data extract. Federal and DOE data are from OPM Report on SES Pay for Performance, 2005.

As can be seen by the proportion of SES who received performance awards at the various sites over the years, it is apparent that there was a change in management practices between FY 2004 and 2005. In FY 2004, EM executives received performance awards at a rate considerably lower than peer executives within the rest of the federal government and within DOE specifically. That changed in FY 2005, with executives' rate of recognition being much more comparable with the Department pattern and higher than the federal-wide average. Though field staff expressed concerns regarding the comparability of SES performance recognition between the field and headquarters, patterns in FYs 2005 and 2006 did not suggest a recognition rate discrepancy. In FY 2005, field (DS) sites were actually awarded at a higher rate than in headquarters, and in FY 2006, field (IS) sites were awarded at a rate higher than headquarters.

Figure 10: SES Performance Awards—Average \$ Value by Organization FY 2004-2006 Pay Outs



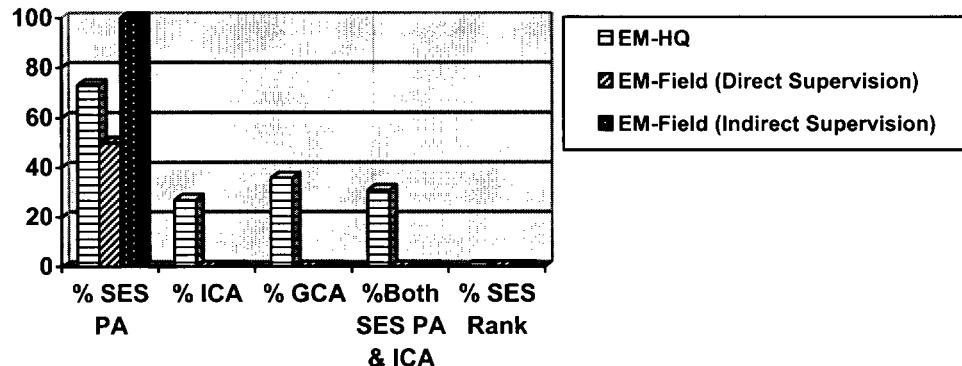
Source: EM data from Office of Human Capital and Business Services data extract. Federal and DOE data are from OPM Report on SES Pay for Performance, 2005.

However, as can be seen in Figure 10 above, the value of SES performance awards given to executives in EM headquarters, field (DS), and field (IS) did vary in FYs 2004-2006, with differences ranging from approximately \$1,000 to \$6,000 on average per year depending on location. In each year, EM field (IS) sites received performance awards less than both headquarters and field (DS) sites. The fact that the value of the awards differed could certainly be attributable to actual differences in performance that were reflected in performance appraisal ratings. In the alternative, however, it could reflect a difference between recognizing performance that is “seen first hand” as is the case in EM headquarters, versus performance recognition as “seen through other than EM rating officials” as in the case of field (IS) locations. Though not the specific target of the Academy study, it is significant to note that in FYs 2004 and 2005, the departmental dollar value of SES performance awards was considerably lower than the average rate within peer federal departments.

Other Lump Sum Cash Recognition

Field staff expressed the concern that headquarters SES recognition exceeded that given in the field; however, the comments received did not pinpoint whether or not that concern related to performance awards or the combination of performance awards and other cash recognition. Therefore, the following individual FY analysis examines SES recognition practices using other forms of cash recognition.

Figure 11: Cash Recognition Recipients—SES*
FY 2006 SES Awards

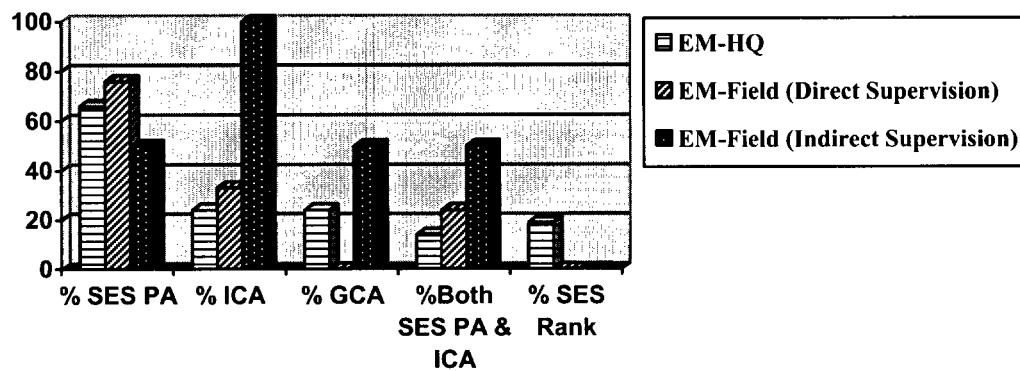


*GCA=Group Cash Awards, ICA=Individual Cash Awards, PA=Performance Awards

Source: Office of Human Capital and Business Services data extract

During FY 2006, over 30 percent of EM headquarters SES received both SES performance and individual cash awards. In the same year, over 35 percent of the SES at headquarters also received group cash awards. Both types of cash awards provided significant (i.e., more than \$2,000 on average) dollar value recognition to recipients. During the same timeframe, field site SES did not receive this type of recognition. Because non-performance award cash recognition is appropriate when employees' work exceeds their normal performance requirements, this implies that over 30 percent of EM headquarters' SES made contributions beyond the expectations of their performance standards/agreements and none of the SES in the field made such contributions. While this study did not audit the individual award actions and the appropriateness of the awards cannot be confirmed, the frequency with which these cash awards is of some concern. Specifically, is it reasonable to assume that over a third of the EM headquarters' SES actually exceeded their performance requirements and that none of the field executives' performance was of an equivalent level of contribution? Or in the alternative, was the cash award given as a proxy for increasing the amount of money provided in the SES performance award?

Figure 12: Cash Recognition Recipients—SES*
FY 2005 SES Awards

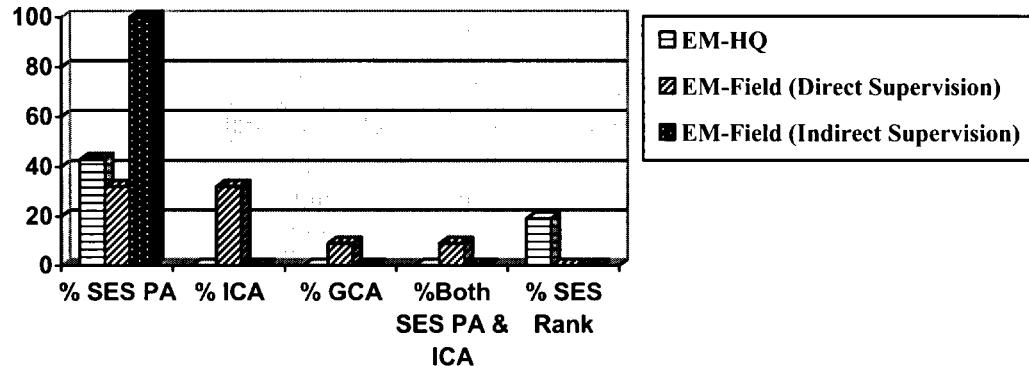


*GCA=Group Cash Awards, ICA=Individual Cash Awards, PA=Performance Awards

Source: Office of Human Capital and Business Services data extract

In FY 2005, the numbers of individual and group cash award recipients was more modest than in 2006, and recipients were distributed more evenly throughout the EM complex. The numbers of EM field (IS) SES is very small, so the high rate of ICA recipients is less significant than it appears in Figure 12. But at the same time, the fact that all SES in that location received cash awards again makes one wonder if the cash award may have been used, in part, as a proxy for SES performance award recognition.

Figure 13: Cash Recognition Recipients—SES*
FY 2004 SES Awards



*GCA=Group Cash Awards, ICA=Individual Cash Awards, PA=Performance Awards

Source: Office of Human Capital and Business Services data extract

In FY 2004, cash awards were reserved for use in EM-field (DS). Is this a reasonable expectation of performance, i.e., that only field personnel would exceed the requirements of their positions? Or does this practice suggest the award was been used in a compensatory manner?

Certainly, EM must determine if the lump-sum cash awards it grants (over and above SES performance bonuses) comply with the eligibility criteria for the respective group and individual awards. However, EM's practice in giving these awards in FYs 2004 and 2006 has the appearance of being more "recognition balance" motivated rather than merit based. During FY 2006, the exclusionary practices of giving these awards to only EM-headquarters' SES could certainly affirm field staff's perception that headquarters' SES are more richly rewarded for their efforts than are their field counterparts.

VIII. WORKFORCE ENVIRONMENT

In addition to the hundreds of interviews conducted throughout the complex, Academy staff also examined the results of OPM's 2006 Federal Human Capital Survey (FHCS) to gain insights into EM staff perceptions about their work environment. The discussion below begins by describing and detailing the results of the FHCS then makes some comparisons with the interview data.

Background on the Federal Human Capital Survey

OPM initiated the FHCS in 2002 and repeated it in 2004 and 2006 to gain workforce perceptions about:

- how effectively agencies manage their workforces
- whether conditions are present to sustain the workforces' commitment to remain in the federal government

The resulting survey data give agencies an essential input for their HC planning and overall efforts to improve organizational performance. In the 2006 survey, more than 220,000 federal employees responded, yielding a government-wide response rate of 57 percent. At EM headquarters and the sites (CBFO, PPPO, Richland, ORP, Savannah River, EMCBC, and other¹¹³), over 750 employees participated in the survey, with a response rate of approximately 59 percent. The employees responding to the FHCS were representative of the total EM workforce:

- 61.53 percent were male and 37.7 percent were female
- 77.8 percent were non-minority
- 74.7 percent were non-supervisory
- 81.8 percent were GS 13s or above
- 90.2 percent had more than 10 years of federal service
- 44.8 percent had more than 20 years of federal service
- 91.5 percent were 40 years old or older
- 60.5 percent were 50 years old or older

FHCS Relevance to EM

In its 2006 Human Capital Management Plan (HCMP), EM's stated objective is to transform into a high-performing organization and create a means to sustain that performance over the long term, and it has established an HC System to ensure the transformation. In February 2006, Assistant Secretary Rispoli underscored this objective with the following quote:

"An organization is only as good as its people."

While EM's technical mission accomplishment is monitored using project management techniques and metrics, perceptions of the EM workforce as reflected in the FHCS are some of the best indicators of progress an organization is making towards its HC objectives.

¹¹³ "Other" represents Los Alamos, Nevada and Oakland. EM employee survey data at Idaho, Oak Ridge, Ohio, and other small sites were not available at the EM level.

Comparison of EM and Federal-wide Survey Results

Based on responses to an extensive array of questions on the FHCS, OPM compiles several indices¹¹⁴ that allow agencies to measure progress:

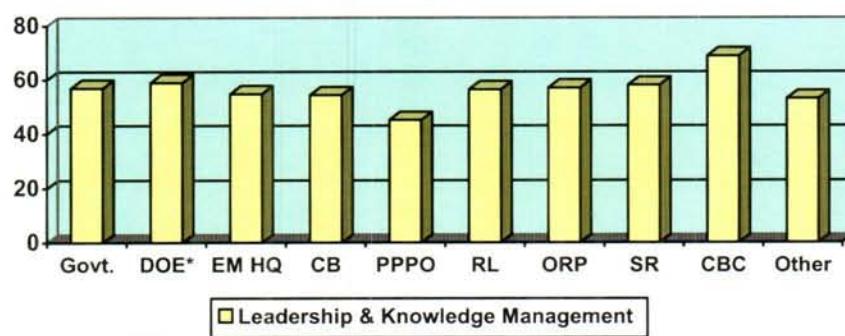
- The Leadership and Knowledge Management Index indicates the extent employees hold their leadership in high regard, both overall and on specific facets of leadership.
- The Results-Oriented and Performance Culture Index indicates the extent employees believe their organizational culture promotes improvement in processes, products and services, and organizational outcomes.
- The Talent Management Index indicates the extent employees think the organization has the talent necessary to achieve its organizational goals.
- The Job Satisfaction Index is another critical index that indicates the extent employees are satisfied with various aspects of their jobs.

Figures 14 through 17 reflect EM headquarters and site results as compared to DOE and government-wide results for each of these four indices. In comparing the rate of positive responses in each of these indices, OPM provides the following rule of thumb:

- Items rated at 65 percent or more are considered strengths.
- Items rated less than 65 percent are candidates for improvement.
- A difference in ratings of five percentage points or more is considered notable in making comparisons.

While OPM applies the above-described thresholds to differentiate between areas that can be considered strengths and those in need of improvement, it does not mean that EM should consider these rates adequate for meeting its needs. For example, it is doubtful that EM would regard a 65 percent positive response rate for leadership and knowledge management as adequate to attain its objective of becoming a high-performing organization.

Figure 14: Leadership & Knowledge Management
(Percentage of Positive Responses)



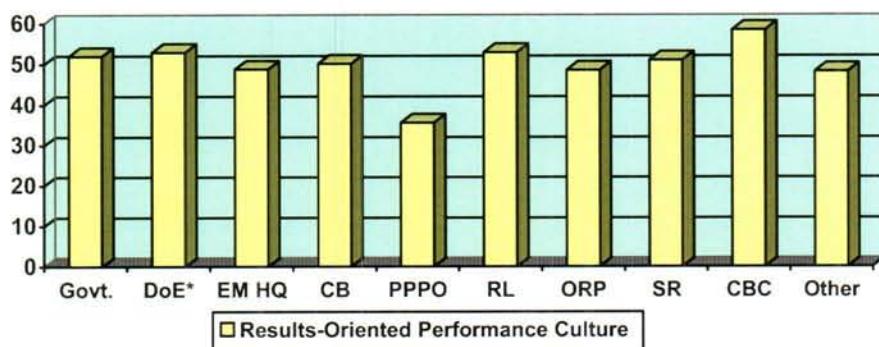
*DOE ranks 14th out of 36 government agencies.

¹¹⁴ Several of these indices align with categories contained within the Human Capital Assessment and Accountability Framework, which implements HC aspects of the President's Management Agenda.

In the area of leadership and knowledge management, EM employee survey responses at headquarters, CBFO, Richland, ORP, and Savannah River are similar to the government- and EM-wide norms of 57 percent and 55 percent, respectively. Exceptions are the PPPO response, which is over 10 percentage points below the norm at 45.2 percent, and the EMCBC response of 68.9 percent, which is almost 10 percentage points above the federal norm.¹¹⁵

While visiting EM sites, Academy staff used focus group interviews, and to a lesser extent individual interviews, to obtain non-supervisory staff perceptions of their work environment. A consistent problem mentioned by staff was that supervisors often were promoted into their positions based on their technical ability and that they lacked adequate training to supervise people. As noted by one staff member, “We don’t hire managers with managerial skills.”

Figure 15: Results-Oriented Performance Culture
(Percentage of Positive Responses)

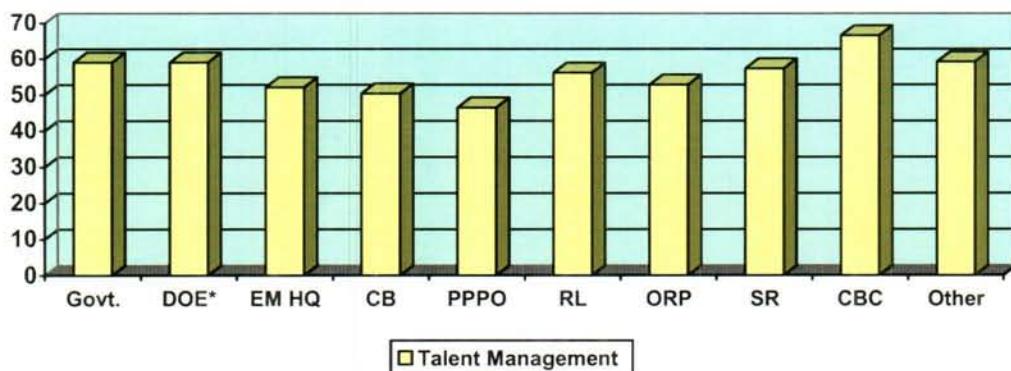


*DOE ranks 20th out of 35 government agencies.

In terms of EM employee perceptions of a results-oriented performance culture, employee responses at headquarters, CBFO, Richland, ORP, and Savannah River are below but close to the government-wide average of 52 percent. The PPPO response is well below at 35.7 percent, but the EMCBC employee response of 58.5 percent is slightly above the federal norm.

¹¹⁵ During the Academy staff's site visit to PPPO, morale was generally high, which is inconsistent with PPPO's scores on the FHCS. This may be attributed to some distinct changes in management style that, according to PPPO staff, have taken place in the past six months. During the July 2007 Panel meeting, EM leadership said that they had noted the lower PPPO scores and planned to assist PPPO management as needed.

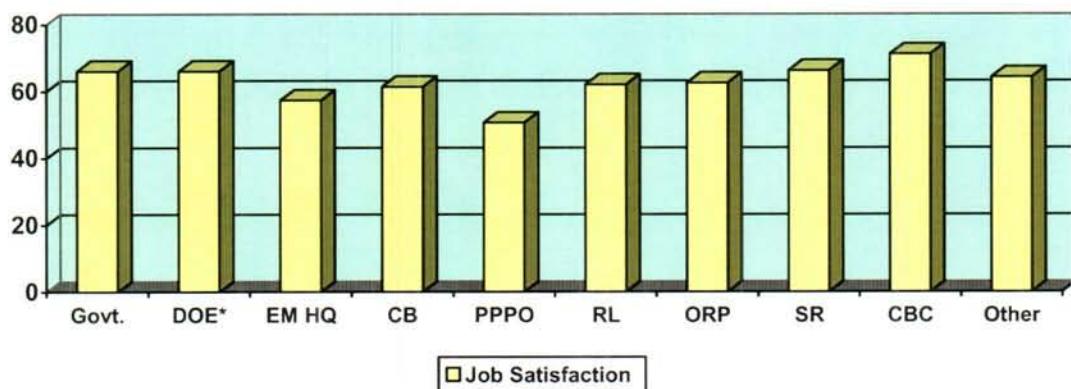
Figure 16: Talent Management
(Percentage of Positive Responses)



*DOE ranks 21st out of 36 government agencies.

EM responses indicate that the EMCBC employees regard talent management efforts more favorably (66.6 percent) than employees government-wide (59 percent). Employee responses at Richland and Savannah River are slightly below the federal norm at 56 and 57 percent, respectively. Employee responses from headquarters, CBFO, PPPO, and ORP are below the government-wide average by five or more percentage points.

Figure 17: Job Satisfaction



* DOE ranks 23rd out of 36 government agencies.

EM employees' survey responses on job satisfaction are within 5 percentage points of the government-wide average of 66 percent with the exception of headquarters and PPPO, where response rates were 57.3 and 50.6 percent, respectively. Interview data indicate that one significant factor that influences job satisfaction and organizational morale appears to be the organization's management. The working relationships of senior managers and their management philosophies impact staff satisfaction with their jobs. Throughout this study, many staff commented that morale in EM has been poor but it is improving.

Strengths

EM employee responses to specific FHCS questions pinpoint certain areas of strengths within EM.

- Over 80 percent of EM employees believe their work is important.
- Almost 82 percent of EM employees know how their work relates to the agency's goals and priorities.
- Over 70 percent of EM employees believe the EM workforce has the knowledge and skills to get the work done.

Employees' comments during interviews with Academy staff typically corroborated that staff clearly understand EM's mission and how their organizations and their positions help accomplish that mission, but some staff did not think that the "how to" was always clear. Many employees said that they valued the challenging work EM offers, and almost all believed their work was important. However, some employees did express concern regarding how their skills were being utilized. Many staff and supervisors expressed confidence in the competency of the current workforce, but were very concerned about the lack of competency depth or bench strength. Similarly, employees raised concerns during the interviews about the impact of prolonged employee absences, retirements, and other attrition in terms of the workload pressures placed on the remaining staff.

Weaknesses

Employees' responses to specific FHCS questions also pinpoint certain areas of weakness within EM.

- 26.8 percent of EM employees believe that performance differences are recognized in a meaningful way.
- 19.4 percent see steps being taken to address poor performance.
- 18.7 percent of EM employees see a link between performance and pay raises.
- 33.4 percent of EM employees express a feeling of personal empowerment with respect to work processes.

Of all the survey questions, the first three questions above received the lowest positive ratings from EM employees. Both the government- and DOE-wide positive response rates to the first two questions, which deal with performance, and to the third question, which deals with pay-performance linkages, were less than 30 percent and less than 25 percent, respectively. On the personal empowerment question, EM also fell below the government- and DOE-wide positive response rates of 42 percent and 46 percent, respectively.

Employees' comments during interviews frequently addressed the issue of personal empowerment. Most notable were the comments made by staff at Richland and even more so by

ORP staff. At these sites, many employees indicated that they felt underutilized and marginalized. They offered several reasons for this including:

- the overall lack of “people-oriented” expertise among the supervisory corps
- the tendency of some supervisors to personally perform technical assignments rather than delegate them to staff
- the tendency of some supervisors to rely on only a select few staff to perform technical assignments
- management’s reliance on the technical advice of contractor staff over that of internal staff

Staff in both Richland and ORP noted that the lack of inclusiveness and empowerment may, in part, be a consequence of the high degree of supervisory turnover experienced at their sites. ORP employees also noted that the high degree of external focus on the very publicized problems encountered at the Waste Treatment and Immobilization Plant may contribute to the supervisory practices they cited.

EM closely monitors the technical competency of its workforce through programs like the FTCP and the Facility Representative Program Requirements. However, interviews conducted throughout the complex during this study found that EM’s supervisors have not consistently received sufficient training to prepare them to be effective supervisors. During the last year, EM has begun inculcating leadership values into project executives through the Project Management Training Program, which all EM executives attend. DOE has recognized that management training needs improvement throughout the Department. In the near future, it will begin a “management boot camp” that will be available to any manager and will be required for all new supervisors. According to a DOE official, this will be an intensive program covering a variety of management/leadership subjects.

Diversity and Representation

EM’s workforce composition, with the exception of Hispanic representation, compared favorably with the nationwide Civilian Labor Force Statistics based on the 2000 Census data.¹¹⁶ While EM has stated its commitment to ensuring a gender and culturally diverse workforce, the organization’s limited hiring in recent years has limited any efforts to effect tangible changes in its workforce composition. Recent statistics reflect EM’s workforce to be 61 percent male and 75.5 percent non-minority. Table 10 on the next page provides a breakdown of the EM workforce compared to the government-wide and overall CLF.¹¹⁷

¹¹⁶ *Federal Civilian Workforce Statistics, The Fact Book*, 2004 Edition.

¹¹⁷ Best Places to Work Website, Partnership for Public Service, 2007.

Table 10: Gender, Race, & National Origin Composition of the EM Workforce Compared to the Government-wide and Overall Civilian Labor Force

Workforce	American Indian	Asian	Black	Hispanic	White	Male	Female	Disabled
EM-wide	2.0%	4.8%	12.30%	5.4%	75.5%	61%	39%	6.9%
Government-wide	1.9%	4.9%	17.4%	7.3%	68.5%	56%	44%	8.0%
Civilian Labor Force	0.8%	4.0%	10.1%	12.6%	71.4%	54.5%	45.5%	Not reported

Source: *Federal Civilian Workforce Statistics, The Fact Book, 2005 Edition* & August 2007 draft EM HCMP.

The numbers highlighted in yellow are the areas where the EM workforce is underrepresented when compared to the CLF. EM's workforce has less than half the Hispanic representation of the CLF, 5.4 percent versus 12.6 percent. EM's representation of females (39 percent) also is below the CLF mark of 45.5 percent.

EM Actions to Address Diversity Issues

Assistant Secretary Rispoli and his leadership team have addressed the importance of a representational workforce in several venues. In August 2006, EM issued its HCMP where EM announced its intention to improve HC management and to become a high-performing organization. The HCMP also affirmed that diversity would be one of the six operating principles that would drive its HC approaches.

Secondly, EM developed and implemented the EM Career Intern Program (EMCIP), which is designed to provide a continuing source of highly competent technical personnel with the skills and knowledge required to meet the EM program's current and future staffing needs. The EMCIP's first cohort of 25 members reported for duty on June 25, 2007. The EMCIP offers EM an avenue to acquire high-quality candidates from the academic environment, and it provides an excellent means to attract minority and female staff to the EM workforce. The composition of the initial cohort of the EMCIP is reflected in Figure 18.

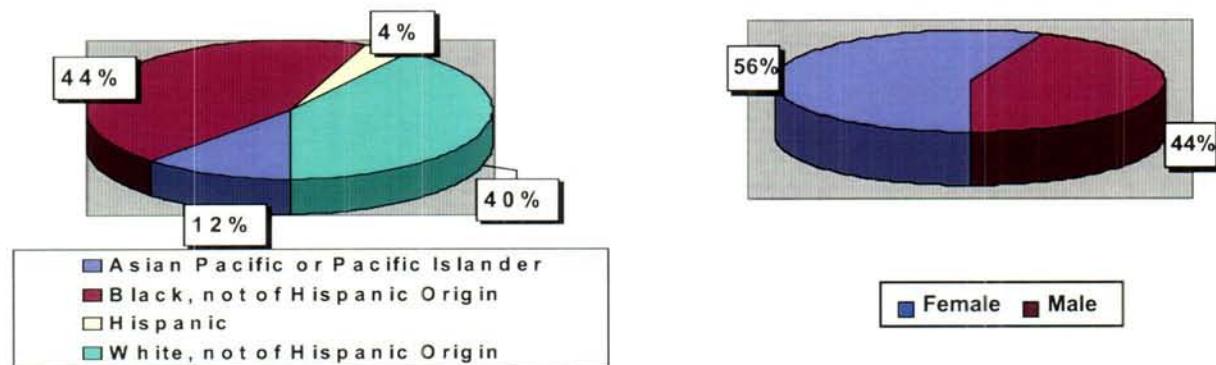
Figure 18: Minority/Gender Composition of the 2007 EMCIP

Image Credits

Trichloroethylene or TCE recovered from the six-phase heating treatability study conducted at the C-400 chemical cleaning facility, ready for shipment and disposal, Paducah Gaseous Diffusion Plant, Paducah, KY (2003). Photo courtesy of the U.S. Department of Energy

Workers test the dimensions of each drum, verify the proper labeling and place them on the template that is used to align the drums on the lifting pallet, Brookhaven National Laboratory, Upton, NY (2005). Photo courtesy of the U.S. Department of Energy

Workers at the sludge retrieval and disposition project connect hoses to ports in the top of large diameter containers that will hold sludge from the north loadout pit in the K East Basin, until it can be grouted later this year, Hanford Site, Richland, WA (2004). Photo courtesy of the U.S. Department of Energy

Savannah River Site workers carefully maneuver a spent fuel cask, Savannah River Site, Aiken, SC (2005). Photo courtesy of the U.S. Department of Energy



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