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April 15, 2010

Congressional Committees

Subject: *Defense Management: Observations on the Department of Defense's Fiscal Year 2011 Budget Request for Corrosion Prevention and Control*

This report formally transmits the attached briefing (see enc. I) in response to section 2228(e) of title 10 of the United States Code. The statute requires the Comptroller General to provide an analysis of the Department of Defense's budget submission for corrosion prevention and control, as well as an analysis of the corrosion report accompanying defense budget materials, and provide the results to the congressional defense committees within 60 days after submission of the Department of Defense budget. On April 2, 2010, we provided the briefing to your committees' offices to satisfy the mandate to provide analysis and the 60-day reporting requirement. The Related GAO Products section at the end of the report lists additional GAO publications on these issues.

We are sending copies of this report to the appropriate congressional committees. We are also sending copies to the Secretary of Defense; the Deputy Secretary of Defense; the Under Secretary of Defense (Comptroller); the Under Secretary of Defense (Acquisition, Technology and Logistics); the Secretaries of the Army, Navy, and Air Force; and the Commandant of the Marine Corps. This report will also be available at no charge on our Web site at http://www.gao.gov. Should you or your staffs have any questions concerning this report, please contact me at (202) 512-8246 or edwardsj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report were Ann Borseth, Assistant Director; Janine Cantin; and Foster Kerrison.

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Observations on DOD's Fiscal Year 2011 Budget Request for Corrosion Prevention and Control

Briefing for Congressional Committees
April 2, 2010

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Background

- Corrosion can have negative effects on military equipment and infrastructure in terms of cost, readiness, and safety.
  - The Department of Defense (DOD), in its July 2009 report, *DOD Annual Cost of Corrosion,* estimated that corrosion costs the military Services over $22 billion a year.
  - GAO has previously reported that corrosion negatively affects military readiness by taking critical systems out of action, and has also impacted safety resulting in fatal accidents due to the degradation of equipment.[1]
  - Corrosion affects all military assets and is defined as the unintended destruction or deterioration of a material due to interaction with the environment. It includes such varied forms as rusting; pitting; galvanic reaction; calcium or other mineral buildup; degradation due to ultraviolet light exposure; and mold, mildew, or other organic decay.

[1]GAO, *Defense Management: High-Level Leadership Commitment and Actions Are Needed to Address Corrosion Issues*, GAO-07-618 (Washington, D.C.: Apr. 30, 2007).

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Background (cont.)

- Congress, concerned with the high cost of corrosion and its negative effects, enacted legislation that created an Office of Corrosion Policy and Oversight within the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics (OUSD(AT&L)), responsible for the prevention and mitigation of corrosion of military equipment and infrastructure.[2]
- According to Corrosion Office officials, to target funding toward corrosion prevention and control (CPC), DOD established, in fiscal year (FY) 2006,
  - a separate funding CPC program element for Research, Development, Test & Evaluation, and
  - a separate corrosion line item within an existing program element for Operation & Maintenance funds.
- Since FY06, the CPC program element and line item have been managed by the Corrosion Policy and Oversight Office (Corrosion Office) within OUSD(AT&L).

[2] 10 USC § 2228.

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Background (cont.)

- DOD's CPC funding goes towards projects proposed by the Services and other DOD-wide activities that are aimed at preventing and mitigating corrosion. The Services contribute complementary funding for each approved project.
  - Projects are specific corrosion prevention and mitigation efforts with the objective of developing and testing new technologies.
  - Activities encompass efforts, such as training and cost studies, that enhance and institutionalize corrosion prevention and mitigation efforts within the department.
- Beginning with DOD's budget for FY09, legislation[3] has required the Secretary of Defense to annually submit, with defense budget materials, a supplemental corrosion funding report that includes
  - funding requirements for DOD's long-term CPC strategy,
  - estimated return on investment (ROI) from implementing this strategy,
  - funds requested compared to funding requirements, and
  - an explanation if requirements are not fully funded.

[3] 10 U.S.C. § 2228(e), added by the National Defense Authorization Act for Fiscal Year 2008, Pub. L. No. 110-181, § 371(d) (2008).

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Engagement Objectives

- As required by 10 U.S.C. § 2228, GAO is to analyze annually DOD's CPC budget submission and related funding report.
  - For FY11, these documents were submitted on Feb. 1, 2010, and Feb. 17, 2010, respectively.
- Our objectives were to:
  1. identify DOD's process for developing its CPC budget submission.
  2. determine the extent to which DOD's FY11 budget request for CPC met total estimated requirements as stated in DOD's FY11 *Corrosion Funding Report*.
  3. calculate the potential cost avoidance for DOD's estimated funded and unfunded CPC requirements as stated in DOD's FY11 *Corrosion Funding Report*.

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Scope and Methodology

- Scope
  - We examined DOD's FY11 CPC budget submission and related budget materials, including DOD's corrosion report, for the CPC program element and line item managed by the Corrosion Office.
  - We did not include a review of related information on Service-provided CPC funding, but instead reviewed the funding managed by OUSD(AT&L) and the related report from the Corrosion Office.
- Methodology
  - We obtained and analyzed DOD CPC budget and requirements data, as well as DOD's corrosion strategy and other pertinent documents.
  - We calculated the potential cost avoidance by projecting DOD's estimated ROI based on historical averages for unfunded projects to the unfunded requirements identified in DOD's FY11 corrosion report.
  - We interviewed officials at the Corrosion Office, as well as Service corrosion officials.

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Scope and Methodology (cont.)

- As in prior years, we did not independently validate DOD's CPC estimated requirements or the estimated ROI. Instead, we relied on data provided by the Corrosion Office after assessing the general reliability of the data by cross-checking with other data sets and interviewing the officials responsible for data collection. We found the data to be sufficient and reliable for the purposes of this report.

- We conducted this performance audit from January through April 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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Summary

- To develop its CPC budget, the Corrosion Office adjusts the amount of the estimated Service CPC projects by a historical project acceptance rate and adds an estimated amount for DOD-wide CPC activities. This total is then adjusted to reflect departmental priorities and included in the annual budget submission.
- In its corrosion funding report, the Corrosion Office estimated that CPC requirements for FY11 totaled **$47.0 million,** but the FY11 budget request identified **$12.0 million** for CPC, including **$8.8 million** for projects and **$3.2 million** for activities. Therefore, DOD's estimated unfunded requirements were about **$35.0 million**. However, due to historical discrepancies between estimated and actual project costs, the unfunded requirements could be overstated.
- Using DOD's estimated ROI, if the amounts identified in the FY11 funding report are funded, the potential cost avoidance would be **$418 million**. By applying DOD's estimated ROI for unfunded projects to the unfunded requirements identified in the corrosion funding report, DOD may be missing an opportunity for additional cost avoidance totaling **$1.4 billion** by not funding all of its estimated requirements.

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Objective 1: Process for Developing CPC Budget--Overview

- The Corrosion Office uses a multi-step process to develop the CPC budget. This process starts with the Services estimating their CPC project requirements. The Corrosion Office then adjusts these Service-provided preliminary project estimates by a historical acceptance rate for CPC projects and adds an estimated amount for Corrosion Office-funded, DOD-wide activities. This total is revised by OUSD(AT&L), based on funding priorities, to determine the estimated funding request for the budget.

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Objective 1: Process for Developing CPC Budget—Estimating Requirements

- In developing its FY11 CPC budget and the information for the related corrosion report, the Corrosion Office
  - asked the Services in September 2009 to estimate the total number of projects that would need funding in FY11 and the cost of these projects, which totaled **$64.4 million;**
  - assumed, based on historical trends, that about **63 percent** of the total cost of the Services' projects would be accepted for funding;
  - adjusted the $64.4 million project cost estimate by the 63 percent to determine the total estimated requirements for CPC projects, which produced an estimate of **$40.6 million** for FY11;
  - estimated an additional **$6.4 million** for other non-project-related corrosion activities funded by the Corrosion Office, based on activities identified as necessary to execute the Corrosion Prevention and Mitigation Strategic Plan; and
  - added the $40.6 million and the $6.4 million for a ***total estimated CPC requirement of $47.0 million.***

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Objective 1: Process for Developing CPC Budget—Developing a Budget Estimate

- According to Corrosion Office officials, they submitted a request for FY11 of **$25 million** to OUSD(AT&L), which is less than the **$47 million** identified requirement. Corrosion Office officials believe that an annual budget of approximately **$25 million** would have been sufficient to meet most of the essential CPC projects and activities.
- According to these officials, OUSD(AT&L) denied part of the $25 million request as acceptable offsets within OUSD(AT&L) could not be identified.
    - According to DOD's corrosion funding report, global commitments, constrained budgets, and competing requirements preclude full funding of CPC requirements.
    - Officials from the Office of the Under Secretary of Defense (Comptroller) previously told us that program offices may consider ROI benefits in developing budget submissions; however, requirements for systems and Services, rather than ROI, drive funding levels in DOD's annual budget request.
- The final amount requested in the FY11 budget for CPC was **$12.0 million**, which Corrosion Office officials told us was determined by OUSD(AT&L) and is a slight increase to DOD's 6-year budget projections.

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Objective 2: Extent the CPC Budget Met Estimated CPC Requirements—Overview

- In its corrosion funding report, the Corrosion Office estimated that CPC requirements for FY11 total **$47.0 million,** but the FY11 budget request identified **$12.0 million**[4] for CPC, including **$8.8 million** for projects and **$3.2 million** for activities. Therefore, DOD's estimated unfunded requirements are about **$35.0 million**. However, because of the method DOD uses to calculate the total estimated requirements, the unfunded requirements could be overstated.

[4] The Corrosion Office FY11 funding report identified $300,000 more (for a total of $12.3 million) than that requested in the FY11 budget. Based on discussion with Corrosion Office officials, we corrected the funding report data to reflect a reduction of $300,000 for corrosion activities.

Objective 2: Extent the CPC Budget Met Estimated CPC Requirements—Funding Accepted Projects

- While the Services submitted their preliminary project estimates for FY11 in fall 2009, they will submit their actual project plans in summer 2010. This later submission will include detailed funding requests for each project.
- At that time, Corrosion Office officials will convene a panel of experts from OUSD(AT&L), the Joint Staff, and the Defense Acquisition University to review the project plans and decide which of those projects will actually be funded. The review includes:
  - determining which projects are acceptable based on criteria (such as ROI, mission criticality, or whether the project has a joint aspect) the Services address in their project submissions; and
  - ranking acceptable projects based on how well they meet the criteria.

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Objective 2: Extent the CPC Budget Met Estimated CPC Requirements—Unfunded Requirements

- As stated earlier, the Corrosion Office estimated that unfunded corrosion requirements total $35.0 million for FY11. However, this unfunded corrosion requirement could be overstated.
  - In FY09 and FY10, the Services' preliminary estimates for project funding submitted in the fall were significantly higher than the amounts requested in actual project plans submitted for review in the summer. (See table 1.) Some examples follow.
    - In FY09, the estimated cost of accepted projects was $28.5 million and the estimated budgeted amount was $10.7 million, creating an estimated unfunded requirement of $17.8 million.
    - However, in FY09, the actual cost of these projects was $13.7 million and the actual amount budgeted was $9.8 million, leaving an actual unfunded requirement of $3.9 million.
    - FY10 showed similar differences between estimated and actual amounts.
- If the preliminary estimates for project funding continue to significantly differ from actual project plans, DOD may not be in a position to accurately report unfunded requirements in its annual budget reports to Congress.

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Objective 2: Extent the CPC Budget Met Estimated CPC Requirements—Estimated v. Actual

Table 1: CPC Project Funding (FY09 through FY11)

Dollars in millions

Fiscal year	Cost of all submitted projects		Cost of accepted projects (requirements)		Amount budgeted		Unfunded requirement[a]	
	Estimated[b]	Actual	Estimated	Actual	Estimated	Actual	Estimated	Actual
2009	47.6	18.4	28.5	13.7	10.7	9.8	17.8	3.9
2010	35.8	21.5	21.5	16.1	9.5	7.3	12.0	8.8
2011	64.4	N/A	40.6	N/A	8.7	N/A	31.8	N/A

Source: GAO analysis of DOD data.

[a] **Unfunded requirements are projects that are accepted but not funded and represent the difference between the "requirements" column and the "Amount budgeted" column.**

[b] **The preliminary estimates for FY09 through FY11 were developed for DOD's reports to Congress, pursuant to 10 USC § 2228(e). FY09 was the first year that the Corrosion Office estimated CPC requirements.**

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Objective 3: Potential Cost Avoidance and CPC Requirements—Overview

- If DOD's estimated ROIs for projects and activities are accurate:
  - the **$12.0 million** identified in the FY11 budget request, if approved, would result in a potential cost avoidance of approximately **$418 million**;
  - and, if all estimated unfunded requirements of **$35.0 million** identified in the FY11 corrosion funding report were funded, the potential total cost avoidance would be approximately **$1.4 billion**.

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Objective 3: Potential Cost Avoidance and CPC Requirements—ROI Estimation Process

- As part of the project selection process, the Corrosion Office requires that an ROI cost-benefit analysis be submitted with project plans.
  - The Services estimate ROI as the ratio of the present value of benefits to the present value of the project's total cost based on funding requested from DOD and the Service's contribution.
  - Corrosion Office guidance uses a **7 percent annual discount rate** by default to estimate the present value of benefits and costs. According to Corrosion Office officials, this is a conservative estimate to avoid overstating the ROI.
  - Submitted ROI analyses and estimated project savings vary by individual project and may span many years.

- Corrosion Office officials informed us that the Project Point of Contact in each Service estimates the ROI, and the Military Department Corrosion Executive approves the analyses submitted to DOD. However, the Military Department Corrosion Executives said that while they have not yet taken on this responsibility, they plan to do so in the future.

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Objective 3: Potential Cost Avoidance and CPC Requirements—Estimated Potential Cost Avoidance

- Based on the 6-year average estimated ROI, the Corrosion Office projects an ROI of 47:1 for all accepted (both funded and unfunded) FY11 projects and 2:1 for activities.
- If DOD's estimated ROIs for projects and activities are accurate,
  - the **$12.0 million** identified in the FY11 budget request, if approved, would result in a potential cost avoidance of approximately **$418 million**.
- Based on historical averages, the Corrosion Office estimates an ROI of about 43:1 for accepted, but unfunded projects, and 2:1 for activities.
  - Using DOD's estimated ROI, the Corrosion Office's FY11 estimated unfunded requirements of **$35.0 million**, would result in a potential cost avoidance for these requirements (projects and activities) of **$1.4 billion**.

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Views of Agency Officials

To obtain agency views, we discussed a draft of the briefing with officials from the Corrosion Policy and Oversight Office and the Services.

They concurred with the facts presented and provided some clarifying comments that we have incorporated as appropriate.

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Related GAO Products

Defense Management: Observations on DOD's Fiscal Year 2010 Budget Request for Corrosion Prevention and Control. GAO-09-732R. Washington, D.C.: June 1, 2009.

Defense Management: Observations on DOD's Analysis of Options for Improving Corrosion Prevention and Control through Earlier Planning in the Requirements and Acquisition Processes. GAO-09-694R. Washington, D.C.: May 29, 2009.

Defense Management: Observations on DOD's FY 2009 Budget Request for Corrosion Prevention and Control. GAO-08-663R. Washington, D.C.: April 15, 2008.

Defense Management: High-Level Leadership Commitment and Actions Are Needed to Address Corrosion Issues. GAO-07-618. Washington, D.C.: April 30, 2007.

Defense Management: Additional Measures to Reduce Corrosion of Prepositioned Military Assets Could Achieve Cost Savings. GAO-06-709. Washington, D.C.: June 14, 2006.

Defense Management: Opportunities Exist to Improve Implementation of DOD's Long-Term Corrosion Strategy. GAO-04-640. Washington, D.C.: June 23, 2004.

Defense Management: Opportunities to Reduce Corrosion Costs and Increase Readiness. GAO-03-753. Washington, D.C.: July 7, 2003.

Defense Infrastructure: Changes in Funding Priorities and Strategic Planning Needed to Improve the Condition of Military Facilities. GAO-03-274. Washington, D.C.: February 19, 2003.

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