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United States Government Accountability Office
Washington, DC 20548

April 13, 2011

Congressional Committees

Subject: *Defense Management: The Department of Defense's Fiscal Year 2012 Corrosion Prevention and Control Budget Request*

In 2010, the Department of Defense (DOD) estimated that corrosion costs the DOD over \$22.9 billion annually. Corrosion negatively affects all military assets, including both equipment and infrastructure, and is defined as the unintended destruction or deterioration of a material due to its interaction with the environment.¹ Corrosion also affects military readiness, taking critical systems out of action and creating safety hazards.

Congress has enacted several legislative requirements to address the high cost of corrosion on military equipment and infrastructure, including legislation that created the Office of Corrosion Policy and Oversight (Corrosion Office) within the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics.² The Corrosion Office is responsible for the prevention and mitigation of corrosion of military equipment and infrastructure and, according to officials, manages funding for DOD-wide corrosion prevention and control (CPC) activities and CPC projects proposed by the Military Departments. Section 2228(e) of Title 10 of the United States Code requires DOD to annually report on CPC funding to Congress.³ Additionally, the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 required each Military Department's corrosion control and prevention executive to submit an annual report with recommendations pertaining to his or her Department's CPC program, including corrosion-related funding levels to carry out all of the duties of the executive.⁴ In fiscal year (FY) 2011, Congress expanded the requirement for DOD to report on its CPC efforts by adding to or revising existing elements.⁵

¹Corrosion 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.

²See 10 U.S.C. § 2228.

³Section 2228(e) was recently amended by section 331 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011, Pub. L. No. 111-383 (2011).

⁴See Pub. L. No. 110-417, § 903 (2008).

⁵See Pub. L. No. 111-383, § 331 (2011) (amending § 2228(e)).

Report Documentation Page

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Section 2228(e), as recently amended, requires DOD to annually submit a report to Congress on corrosion funding as part of its annual budget submission.⁶ In the report, DOD is to address funding requirements for its long-term corrosion reduction strategy, the return on investment (ROI) that would be achieved by implementing the strategy, the current and previous fiscal year funds requested in the budget compared to funding requirements, an explanation if funding requirements are not fully funded in the budget, and the current and previous fiscal year amount of funds requested in the budget for each project or activity described in its long-term strategy compared to the funding requirements for the project or activity. DOD is also to include a copy of the annual corrosion report most recently submitted by the corrosion executive of each Military Department, in an annex to DOD's report. The law also requires us to analyze DOD's budget submission and report and provide an assessment to the congressional defense committees within 60 days after the submission of the budget for the fiscal year,⁷ which occurred on February 14, 2011.

This letter and enclosure I provide our mandated analysis of DOD's CPC budget request and the Corrosion Office's accompanying report for FY 2012. Accordingly, our objectives were to: (1) determine the extent to which DOD's corrosion report addressed the mandated requirements, (2) assess the extent to which the CPC budget request met total estimated CPC funding requirements for activities and preliminary project proposals as stated in the FY 2012 DOD corrosion report, and (3) calculate the potential cost avoidance for DOD's CPC budget request and reported budget shortfall identified in the FY 2012 DOD corrosion report. (See the related GAO products at the end of enclosure I for a list of corrosion-related reports.)

Scope and Methodology

To conduct this work, we analyzed data on DOD's CPC budget request and DOD's corrosion strategy, Corrosion Office-estimated CPC activity requirements and preliminary and actual project proposals, and other pertinent documents. In addition, we interviewed Corrosion Office and Military Department officials to obtain information on DOD's process for developing the CPC budget request, the FY 2012 DOD corrosion report, and the estimated ROIs used to calculate potential cost avoidance for DOD's CPC budget request and reported budget shortfall. To determine the extent to which the DOD and Military Department reports addressed the mandated requirements, we assessed the DOD and Military Department reports against the mandated requirements using qualitative content analyses. Two analysts independently reviewed the reports, recorded their observations, and discussed and reconciled any differences. The final assessment reflected our consensus. In addition, we discussed our preliminary analyses with Corrosion Office and Military Department officials to seek additional information in those cases where we determined that a report did not meet the mandated requirements. We considered the element addressed when the report explicitly discussed all parts of the element and not addressed when the report did not explicitly address any part of the mandated element. To assess the extent to which the CPC budget request met total estimated CPC funding requirements for activities and preliminary project proposals, we compared the CPC budget request to the reported funding requirements for CPC activities and preliminary

⁶Section 2228(e), *amended by* Pub. L. No. 111-383, § 331.

⁷Section 2228(e)(2), *amended by* Pub. L. No. 111-383, § 331(2).

project proposals. To calculate the potential cost avoidance for DOD's CPC budget request and reported budget shortfall identified in the FY 2012 DOD corrosion report, we multiplied the CPC budget request and reported budget shortfall by the relevant estimated ROIs for activity requirements and preliminary project proposals provided by the Corrosion Office. As in prior years, we did not independently validate the Corrosion Office's estimated CPC activity requirements, project proposals, or estimated ROIs. Instead, we relied on data provided by the Corrosion Office after assessing the general reliability of the data by cross-checking them with other data sets and interviewing the officials responsible for the data collection. We found the data to be sufficiently reliable for the purposes of (1) presenting budget requirements, funding requested, and shortfall data as stated in DOD's corrosion report and (2) calculating potential cost avoidance based on these data and estimated ROI information provided by Corrosion Office officials.

We conducted this audit from January 2011 through April 2011 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.

Summary

Of the six mandated elements, DOD's corrosion report addressed five elements and did not address one element. DOD's corrosion report addressed elements such as funding requirements for a long-term corrosion reduction strategy, ROI that would be achieved by implementing the strategy, the funds requested in the budget compared to funding requirements (for the current and previous fiscal year), and an explanation if funding requirements are not fully included in the budget request. DOD's corrosion report also included the Military Departments' annual corrosion reports in an annex. DOD's corrosion report did not address the requirement to compare the amount of funds requested in the budget to funding requirements for each project or activity in the strategy. Corrosion Office officials stated that they did not have enough time to incorporate this newly-required information into the report. The Military Departments' reports included recommendations pertaining to the CPC program, but did not include the funding levels required to carry out all duties of the corrosion control and prevention executive. According to Military Department officials, this is because it is difficult for the Military Departments to develop a comprehensive estimate of its departmentwide corrosion costs. Without such an estimate, they are unable to recommend the funding levels needed to carry out the executive's duties. Without all of the required information, DOD senior leaders and Congress may face challenges in assessing the levels of funding needed to effectively and cost efficiently prevent and control corrosion.

DOD reported that the FY 2012 total estimated CPC funding requirement for all CPC activities and preliminary project proposals is \$43.2 million. Of this total, DOD requested \$11.1 million in its FY 2012 budget. Therefore, DOD's reported budget shortfall is about \$32.1 million. However, the actual shortfall is somewhat less than the reported budget shortfall because the Corrosion Office develops its estimated CPC funding requirement based on the Military Departments' preliminary project proposals, which have historically exceeded the number of actual project proposals submitted for funding consideration.

Using DOD's estimated ROIs, we calculated that if the amount requested in DOD's FY 2012 budget request is funded, the potential cost avoidance could be about \$291.8 million. By applying DOD's estimated ROIs to the reported budget shortfall identified in its corrosion

report, DOD may be missing an opportunity for additional cost avoidance totaling around \$721.4 million by not funding all of its estimated CPC activity requirements and preliminary project proposals. The accuracy of these calculations is contingent on the accuracy of the estimated ROIs that have not been validated. Moreover, due to historical differences between the number of preliminary project proposals and actual project proposals, the actual shortfall—and therefore the potential cost avoidance—could be somewhat less.

For additional information on the results of our work, see enclosure I.

Recommendations for Executive Action

We are making recommendations to the Secretary of Defense to help ensure that the Corrosion Office and Military Department annual reports provide information on all of the mandated elements. Specifically, to ensure that Congress has all of the information it needs to exercise its oversight responsibilities, we recommend that the Secretary of Defense take the following two actions:

- Direct the Under Secretary of Defense for Acquisition, Technology and Logistics to include all required elements in DOD's future corrosion reports.
- Direct the Secretary of each Military Department to provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executive. As the Military Departments develop the elements needed to provide the full funding levels, they should include the information on these elements in their annual reports.

Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD concurred with both recommendations. DOD's written comments are reprinted in enclosure II.

DOD concurred that it should include all required elements in its future corrosion reports. DOD stated that the report, as submitted, provides Congress with all the information it needs to exercise its oversight responsibilities. DOD also commented that budgets for both activities and projects were provided and that activities are being executed in accordance with the *DOD Corrosion Prevention and Mitigation Strategic Plan*. However, as we stated earlier, DOD's corrosion report did not include, for the current and previous fiscal year, the amount of funds requested in the budget compared to the funding requirements for each project or activity in the strategy. Therefore, DOD should include this information in its FY 2013 report.

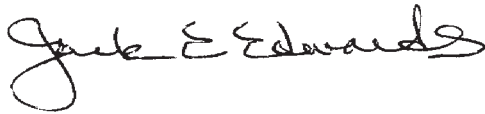
DOD concurred that it should provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executives and that as the Military Departments develop the elements needed to provide the full funding levels, they should include the information on these elements in their annual reports. DOD commented that it will, in future reports, provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executive, as described in DOD guidance.

We continue to believe that DOD leaders and Congress need all of the required information to exercise their oversight responsibilities. Because neither DOD's nor the Military Departments' reports provided all of the required information, DOD leaders and Congress may not be able to

determine the size of the Corrosion Office's budget needed to cost-effectively prevent and mitigate corrosion's negative effects.

We are sending copies of this report to the appropriate congressional committees. We are also sending copies to Secretary of Defense; the Deputy Secretary of Defense; the Under Secretary of Defense for Acquisition, Technology and Logistics; the Secretaries of the Army, Navy, and Air Force; and the Commandant of the Marine Corps. The report also is available at no charge on the GAO Web site at <http://www.gao.gov>.

Should you or your staff have questions concerning this report, please contact me on (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. GAO staff who made key contributions to this report are list in enclosure III.



Jack E. Edwards
Director, Defense Capabilities and Management

Enclosures - 3

List of Committees

The Honorable Carl Levin
Chairman
The Honorable John McCain
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Daniel K. Inouye
Chairman
The Honorable Thad Cochran
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Howard P. "Buck" McKeon
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable C.W. Bill Young
Chairman
The Honorable Norman D. Dicks
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives



**The Department of Defense's
Fiscal Year 2012 Corrosion Prevention
and Control Budget Request**



Background: To mitigate corrosion's negative effects, Congress established the Corrosion Office

- Congress has enacted several legislative requirements to address the high cost of corrosion and its negative effects, including legislation that created the Office of Corrosion Policy and Oversight (Corrosion Office) within the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics (AT&L). The Corrosion Office is responsible for the prevention and mitigation of corrosion of military equipment and infrastructure.¹
- Corrosion can have negative effects on military equipment and infrastructure in terms of cost, readiness, and safety.
 - The Department of Defense (DOD), in its *Annual Corrosion Report for 2010*, estimated that corrosion costs DOD \$22.9 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.²
- Corrosion affects all military assets and is defined as the unintended destruction or deterioration of 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.

¹10 U.S.C. § 2228(a)

²GAO, *Defense Management: High-Level Leadership Commitment and Actions Are Needed to Address Corrosion Issues*, GAO-07-618 (Washington, D.C.: Apr. 30, 2007).



Background: Corrosion Office funds DOD-wide CPC activities and projects

- DOD began targeting funding toward corrosion prevention and control (CPC) in fiscal year (FY) 2006 when DOD established a separate program funding element for Research, Development, Test and Evaluation and a separate corrosion line item within an existing program element for Operation and Maintenance.
- The budget request, requirements, and shortfalls contained in the FY 2012 DOD corrosion report reflect this program funding element and line item. According to Corrosion Office officials, the budget request, requirements, and shortfalls contained in the FY 2012 DOD corrosion report represent only a portion of DOD's total CPC requirements and requested funding for CPC efforts.
- The Corrosion Office manages the CPC program element and line item. The funding goes toward DOD-wide CPC activities and projects proposed by the Military Departments. The Corrosion Office defines activities and projects as follows:
 - Activities are essential to the success and institutionalization of the corrosion program within DOD. The Corrosion Office identifies these as "required activities." Examples include
 - conducting cost-of-corrosion studies and
 - identifying and updating corrosion-related specifications and standards.
 - Projects are Military Department technology demonstration projects for both weapon systems and infrastructure that the Corrosion Office identifies as acceptable for funding, if funding is available. For most accepted project proposals, the Military Departments supplement the Corrosion Office's funding, which is generally up to \$500,000 per project. Examples include
 - dehumidification of PATRIOT missile equipment and
 - corrosion protection for bulk fuel storage tank bottoms.



Background: Corrosion Office develops its CPC budget request

- As we reported in 2010, the Corrosion Office uses a multistep process to develop its CPC budget request.³ The Corrosion Office:
 - Asks the Military Departments, in the fall, to submit preliminary project proposals for the future fiscal year. These preliminary project proposals only specify the title and estimated cost for each proposal.
 - Reduces the total estimated cost of preliminary project proposals by 37 percent, to reflect the percentage of actual project proposals the Corrosion Office has determined historically to be acceptable for funding based on established project selection criteria.
 - Estimates funding needed for activities and adds this to the adjusted total estimated cost of preliminary project proposals to identify total estimated CPC funding requirements for activities and preliminary project proposals.
 - Reduces the total estimated CPC funding requirements for activities and preliminary project proposals to reflect the estimated costs of funding only the highest priority activities and projects. Corrosion Office officials explained that they make this adjustment because the Director of the Corrosion Office has determined that based on past experience, a request for the total estimated CPC activity requirements and preliminary project proposals is unlikely to be approved. For example, historically, AT&L has not approved the full request citing global commitments, constrained budgets, and competing requirements.
 - Submits the CPC budget request to AT&L.

³GAO, *Defense Management: Observations on the Department of Defense's Fiscal Year 2011 Budget Request for Corrosion Prevention and Control*, GAO-10-607R (Washington, D.C.: Apr. 15, 2010).



Background: DOD's corrosion report to Congress was mandated to contain four types of information in prior years

- Since FY 2009, the Secretary of Defense has been mandated to annually submit, with defense budget materials, a corrosion funding report with information on these elements:⁴
 - Funding requirements for the long-term strategy to reduce corrosion and its effects.
 - The return on investment (ROI) that would be achieved by implementing the strategy.
 - The funds requested in the budget compared to the funding requirements.
 - An explanation if the funding requirements are not fully funded in the budget.

⁴10 U.S.C. § 2228(e)(1). As indicated in the following slide, the third element was slightly modified in January 2011.



Background: DOD's corrosion report to Congress is now mandated to contain three additional or revised types of information

- The Ike Skelton National Defense Authorization Act for Fiscal Year 2011 increased the information mandated in the DOD corrosion report.⁵ The new and expanded elements are:
 - For the fiscal year covered by the report and the preceding fiscal year, the funds requested in the budget compared to the funding requirements.⁶
 - For the fiscal year covered by the report and the preceding fiscal year, the amount of funds requested in the budget for each project or activity in the long-term strategy compared to the funding requirements for the project or activity.
 - In an annex, a copy of the most recent annual report submitted by the corrosion control and prevention executive of each Military Department to the Secretary of Defense.⁷ Each Military Department report is required to include⁸ recommendations pertaining to the Military Department's CPC program, including corrosion-related funding levels required to carry out all of the duties of the corrosion control and prevention executive.

⁵See Pub. L. No. 111-383, § 331(1), (3) (2011) (amending § 2228(e)).

⁶This element previously existed in the mandate, as indicated on the previous slide, but was modified in the act.

⁷Section 2228(e)(3), *added by* Pub. L. No. 111-383, § 331(3). The annual reports are submitted pursuant to section 903(b)(5) of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, Pub. L. No. 110-417 (2008).

⁸See Pub. L. No. 110-417, § 903(b)(5).



Objectives

- As mandated,⁹ we analyzed DOD's CPC budget request and its accompanying corrosion report for FY 2012. Our objectives were to
 1. determine the extent to which DOD's corrosion report addressed the mandated requirements,
 2. assess the extent to which the CPC budget request met total estimated CPC funding requirements for activities and preliminary project proposals as stated in the FY 2012 DOD corrosion report, and
 3. calculate the potential cost avoidance for DOD's CPC budget request and reported budget shortfall identified in the FY 2012 DOD corrosion report.

⁹10 U.S.C. § 2228(e)(2), amended by Pub. L. No. 111-383, § 331(2).



Scope and Methodology

- To conduct this work, we analyzed data on DOD's CPC budget request and DOD's corrosion strategy; Corrosion Office-estimated CPC activity requirements and preliminary and actual project proposals; and other pertinent documents. In addition, we interviewed Corrosion Office and Military Department officials to obtain information on DOD's process for developing the CPC budget request, the FY 2012 DOD corrosion report, and the estimated ROIs used to calculate potential cost avoidance for DOD's CPC budget request and reported budget shortfall.
- To determine the extent to which the DOD and Military Department reports addressed the mandated requirements, we
 - assessed the DOD and Military Department reports against the mandated requirements using qualitative content analyses;
 - independently reviewed the reports using two analysts, compared and reconciled their observations, and recorded the analysts' consensus observations; and
 - discussed our preliminary analyses with Corrosion Office and Military Department officials to seek additional information in those cases where we determined that a report did not meet the mandated requirements.
- We considered the element addressed when the report explicitly discussed all parts of the element and not addressed when the report did not explicitly address any part of the mandated element.



Scope and Methodology (cont.)

- To assess the extent to which the CPC budget request met total estimated CPC funding requirements for activities and preliminary project proposals, we compared the CPC budget request to the reported CPC activity requirements and preliminary project proposals.
- To calculate the potential cost avoidance for DOD's CPC budget request and reported budget shortfall identified in the FY 2012 DOD corrosion report, we multiplied the CPC budget request and reported budget shortfall by the relevant estimated ROIs for activity requirements and project proposals provided by the Corrosion Office.
- As in prior years, we did not independently validate the Corrosion Office's estimated CPC activity requirements, project proposals, or estimated ROIs. Instead, we relied on data provided by the Corrosion Office after assessing the general reliability of the data by cross-checking the with other data sets and interviewing the officials responsible for the data collection. We found the data to be sufficiently reliable for the purposes of (1) presenting budget requirements, funding requested, and shortfall data as stated in DOD's FY 2012 corrosion report and (2) calculating potential cost avoidance based on these data and estimated ROI information provided by Corrosion Office officials.
- We conducted this audit from January 2011 through April 2011 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.



Summary: Objective 1

- **Objective 1:** Of the six mandated elements, DOD's corrosion report addressed five elements and did not address one element.
 - DOD's corrosion report addressed elements such as ROI and the mandate to include the Military Departments' annual corrosion reports in an annex. DOD's corrosion report also addressed funding requirements for a long-term strategy, for the current and previous fiscal year; the funds requested in the budget compared to the funding requirements; and an explanation of the difference.
 - DOD's corrosion report did not include, for the current and previous fiscal year, the amount of funds requested in the budget compared to the funding requirements for each project or activity in the strategy. Corrosion Office officials stated that they did not have enough time to incorporate this newly required information into the report.
 - The Military Departments' reports included recommendations pertaining to the CPC program, but did not include the funding levels required to carry out all duties of the corrosion control and prevention executives. According to Military Department officials, this is because it is difficult for the Military Departments to develop comprehensive estimates of their departmentwide corrosion costs. Without such estimates, they are unable to recommend the funding levels needed to carry out the executives' duties.
 - Without all of the required information, DOD senior leaders and Congress may face challenges in assessing the levels of funding needed to effectively and cost efficiently prevent and control corrosion.



Summary: Objectives 2 and 3 and Recommendations

- **Objective 2:** DOD reported that the FY 2012 total estimated CPC funding requirement for all CPC activities and preliminary project proposals is \$43.2 million. Of this total, DOD requested \$11.1 million in its FY 2012 budget. Therefore, DOD's reported budget shortfall is about \$32.1 million. However, the actual shortfall is less than the reported budget shortfall because the Corrosion Office develops its estimated CPC funding requirement based on the Military Departments' preliminary project proposals, which have historically exceeded the number of actual project proposals later submitted for funding.
- **Objective 3:** Using DOD's estimated ROIs, if the amount requested in the FY 2012 budget is funded, the potential cost avoidance could be about \$291.8 million. By applying DOD's estimated ROIs to the reported budget shortfall identified in its corrosion report, DOD may be missing an opportunity for additional cost avoidance totaling around \$721.4 million by not funding all of its estimated CPC activity requirements and preliminary project proposals. The accuracy of these calculations is contingent on the accuracy of the estimated ROIs which have not been validated. Moreover, due to historical differences between the number of preliminary project proposals and actual project proposals, the actual shortfall—and therefore the potential cost avoidance—could be less.
- **Recommendations for Executive Action:** We are making recommendations to help ensure that DOD and Military Department reports provide needed information. DOD concurred with our recommendations.



Objective 1: Extent report addressed elements

DOD's corrosion report addressed five of six mandated elements

- DOD's corrosion report addressed five of the six mandated elements:
 - **Funding requirements for long-term strategy—Addressed:** Provided in the report.
 - **ROIs from implementing strategy—Addressed:** Provided ROI estimates in the report. As we reported in December 2010, actual ROIs for funded projects will not be available until around 5 years after a project is started.¹⁰
 - **Current and previous fiscal year funds requested compared to funding requirements—Addressed:** Provided in the report.
 - **Explanation if funding requirements not fully included in the budget request—Addressed:** Provided in the report.
 - **An annex with the Military Departments' reports—Addressed:** Provided in the report.
- DOD's corrosion report did not address one mandated element:
 - **Current and previous fiscal year amount of funds requested in the budget compared to the funding requirements for each project or activity—Did not address:** The report contains the CPC budget request for the current and previous fiscal year and identifies the total estimated CPC funding requirements for activities and preliminary project proposals for the long-term strategy, but the report does not list the funding amounts for each activity and project in the strategy.

¹⁰GAO, *Defense Management: DOD Has a Rigorous Process to Select Corrosion Prevention Projects, but Would Benefit from Clearer Guidance and Validation of Returns on Investment*, GAO-11-84 (Washington, D.C.: Dec. 8, 2010).



Objective 1: Extent report addressed elements

Military Departments' reports addressed one of two requirements

- In the annex to DOD's corrosion report, each Military Department report addressed one of two requirements:
 - **Recommendations pertaining to the CPC program, including corrosion related funding levels required to carry out all of the duties of the corrosion control and prevention executive—Addressed one of two requirements:** Each Military Department report contains recommendations pertaining to the CPC program. Although each Military Department report provides an overview of its CPC efforts and discusses funding for some of the efforts, none of the Military Department reports recommended the level of funding needed to carry out the duties of the corrosion control and prevention executive. For example:
 - The Army report identified the total amount of its FY 2010 departmentwide CPC expenditures, but the report did not specify how much was needed to carry out the Army corrosion control and prevention executive's duties, which are distinct from individual projects.
 - The Navy report discussed the total amount it anticipated could be spent by the Navy and Corrosion Office for CPC projects in FY 2011, but the report did not identify a level of funding needed to carry out the Navy corrosion control and prevention executive's duties, which are distinct from individual projects.
 - The Air Force report identified the FY 2012 funding requested from the Corrosion Office for CPC projects, but the report did not identify a level of funding needed to carry out the Air Force corrosion control and prevention executive's duties, which are distinct from individual projects.



Objective 1: Extent report addressed elements

Reasons reports did not address certain elements

- According to Corrosion Office and Military Department officials, there are a variety of reasons that the reports do not contain all of the required information.
 - Corrosion Office officials explained that the requirement for new information came into effect in January 2011, and that they did not have enough time to incorporate all of the newly required information into DOD's corrosion report. Corrosion Office officials said that they plan to include the additional element in future reports.
 - Military Department officials explained that they were unable to include funding levels required to carry out all duties of the corrosion control and prevention executives because the Military Departments lacked comprehensive estimates for the cost of their own departmentwide CPC efforts. According to Military Department officials, they are in the process of developing comprehensive estimates for their CPC efforts.
- Because neither DOD's nor the Military Departments' reports provided all of the required information, DOD senior leaders and Congress may not have all of the information needed to exercise their oversight responsibilities, such as determining the funding needed to cost effectively prevent and mitigate corrosion's negative effects.



Objective 2: Extent request meets reported needs

DOD reports budget shortfall of \$32.1 million

- DOD's corrosion report showed that the total estimated CPC funding requirements for activities and preliminary project proposals for FY 2012 is about **\$43.2 million**, but the FY 2012 CPC budget request was about **\$11.1 million**. Therefore, DOD's reported budget shortfall is about **\$32.1 million** (\$4.7 million for required activities and \$27.4 million for preliminary project proposals). Table 1 shows these data and corresponding data for 3 prior years.

Table 1: DOD's Reported CPC Funding Requirements for Activities and Preliminary Project Proposals, Budget Requests, and Budget Shortfalls, Fiscal Years 2009 to 2012 (Dollars in Millions)

Fiscal year	Activities	Preliminary project proposals	Sum of activities and preliminary project proposals	CPC budget request	Reported budget shortfall ^a
2009	\$3.4	\$28.5	\$32.0	\$14.2	\$17.8
2010	\$6.2	\$21.5	\$27.7	\$13.1	\$14.5
2011	\$6.5	\$40.6	\$47.0	\$12.0	\$35.1
2012	\$8.3	\$34.9	\$43.2	\$11.1	\$32.1

Source: GAO analysis of DOD data.

^aThe reported budget shortfall is the total estimated CPC funding requirements for activities and preliminary project proposals minus the CPC budget request. Totals for a fiscal year may not add due to rounding.



Objective 2: Extent request meets reported needs

Actual shortfall is likely to be less than the reported shortfall

- The actual shortfall is likely to be less than the reported budget shortfall shown in table 1. Historically, the Military Departments have submitted fewer actual project proposals than preliminary project proposals. Therefore, even if the estimated project cost for every actual project proposal is the same as the estimate contained in the earlier preliminary project proposal, the total “required” funding would decrease between the fall and spring submissions because the Military Departments have dropped some of their proposed projects. For example:
 - In the fall of 2009, the Military Departments submitted 173 preliminary project proposals to the Corrosion Office.
 - The Corrosion Office used the estimated costs from the 173 proposals to develop the total estimated cost of preliminary project proposals as reported in DOD’s corrosion report.
 - In the spring of 2010, the Military Departments submitted 81 actual project proposals (a reduction of 92 proposals) to the Corrosion Office. Actual project proposals are detailed proposals that consider factors such as the availability of matching funding from the Military Departments and testing assets.
 - For each of the past 3 years, the number of preliminary project proposals and the total budget needed to fund all of the preliminary project proposals have exceeded the number of actual project proposals and the total budget needed to fund the actual project proposals later submitted by the Military Departments (see table 2).
- As a result, the funding required for actual project proposals and the budget shortfall are likely to be somewhat less than the amounts reported to Congress.



Objective 2: Extent request meets reported needs

Number of Military Department projects higher in fall than in spring

- From FY 2009 to FY 2011, the number of Military Department preliminary project proposals submitted to the Corrosion Office in the fall were about twice the number of actual project proposals submitted to the Corrosion Office in the spring (see table 2).

Table 2: Difference between the Number of Preliminary and Actual Project Proposals Submitted by the Military Departments to the Corrosion Office, Fiscal Years 2009 to 2012 (Dollars in Millions)

Fiscal year	Number of preliminary project proposals	Budget needed to fund preliminary project proposals	Number of actual project proposals	Budget needed to fund actual project proposals	Decrease in proposals: number	Decrease in proposals: percent	Decrease in budget: amount
2009	116	\$47.6	60	\$19.7	56	48	\$27.9
2010	119	\$35.8	66	\$20.8	53	45	\$15.0
2011	173	\$64.4	81	\$23.5	92	53	\$40.9
2012	157	\$55.4	Not available ^a	Not available	Not available	Not available	Not available

Source: GAO analysis of DOD data.

^a Information on FY 2012 actual project proposals is not yet available because the Military Departments will submit their actual project proposals in spring 2011.



Objective 2: Extent request meets reported needs

Reasons Military Departments submit fewer actual project proposals

- The reason the number of actual project proposals submitted in the spring is smaller than the number of preliminary project proposals submitted in the fall is that the Military Departments are sometimes unable to plan for changing project variables (e.g., the availability of Military Departments' funding or testing assets).
- Corrosion Office officials provided examples of how changes in key variables can result in the Military Departments submitting a preliminary project proposal in the fall but not submitting that proposal as an actual project proposal in the spring. For example:
 - If the Military Department plans to provide funding in the fall, but is unable to provide funding in the spring, staff may be shifted to other funded projects.
 - Many projects require technology demonstrations to be performed on testing assets, such as a weapon system. However, due to deployments, a weapons system's availability may change between the fall and spring, and the weapon system may no longer be available when the project is planned to begin.
 - Some preliminary project proposals are not developed into actual project proposals because interim discussions between the Military Departments and the Corrosion Office identify factors that suggest the proposal is unlikely to receive Corrosion Office matching funds.



Objective 3: Potential cost avoidance

Military Departments required to estimate ROIs

- As part of the project selection process, the Corrosion Office requires that an estimated ROI cost-benefit analysis be submitted for each actual project proposal.
- The estimated ROI is the ratio of the present value of benefits to the present value of the actual project proposal's total cost. The total cost for each project is based on both the funding requested from the Corrosion Office and the funding provided by the Military Department.
 - Corrosion Office guidance uses a **7 percent annual discount rate** to estimate the present value of benefits and costs. According to Corrosion Office officials, this is a conservative estimate to avoid overstating the project's eventual ROI.
 - Estimated ROI analyses and estimated savings vary for each actual project proposal submitted by the Military Departments. As we reported in 2010, ROI validations are not available until around 5 years after a project is started.¹¹
- Corrosion Office officials informed us that a Military Department point of contact estimates the ROI that is included in the actual project proposal.
 - In the Army and Navy, the corrosion control and prevention executive reviews the actual project proposal—including the estimated ROI—before the materials are submitted to the Corrosion Office.
 - Air Force officials explained that currently the corrosion control and prevention executive does not review the actual project proposals before submission, but will take on a more significant oversight role in the future.

¹¹GAO-11-84.



Objective 3: Potential cost avoidance

FY 2012 request could result in cost avoidance of about \$291.8 million

- Corrosion Office officials provided us estimated ROIs of 38:1 for all accepted projects, 26:1 for all other projects, and 2:1 for all activities, based on cumulative 7-year averages.
 - The 6-year average for accepted projects that the Corrosion Office provided to us in 2010 was an estimated 47:1.¹² This means that the current average of 38:1 is \$9 less for each \$1 invested by the Corrosion Office and the Military Departments.
 - The 6-year and 7-year average estimated ROIs for CPC activities were both 2:1.
- If the Military Departments' 7-year average estimated ROIs are accurate,
 - the **\$11.1 million** identified in the FY 2012 CPC budget request (\$3.6 million for activities and \$7.5 million for preliminary project proposals), could—if approved—result in a potential cost avoidance of about **\$291.8 million**, and
 - if the CPC activity requirements and preliminary project proposals identified in the \$32.1 million reported budget shortfall (\$4.7 million for all other activities and \$27.4 million for all other preliminary project proposals) were funded, the potential total cost avoidance could be about **\$721.4 million**.
- The accuracy of these calculations is contingent on the accuracy of the estimated ROIs, which have not been validated. Moreover, as we explained earlier, DOD's reported funding requirements for preliminary project proposals may exceed the funding required for actual project proposals. Therefore, the cost avoidance that could result from funding the reported budget shortfall could be less than \$721.4 million.

¹²GAO-10-607R.



Objective 3: Potential cost avoidance

Military Departments' ROI validations incomplete

- The DOD *Corrosion Prevention and Mitigation Strategic Plan* notes that follow-on reviews of completed projects are required and are to focus on validating the completed project's ROI.
- As we reported in December 2010,¹³ the Military Departments have completed about one-third of their required ROI validations for projects funded in FY 2005, but completion of the remaining projects' validations for that year is behind schedule.
 - We reported that the Military Departments had completed the ROI validation for 10 of the 28 implemented projects funded in FY 2005.¹⁴
 - As of March 2011, the Military Departments had completed one additional ROI validation.
- According to Military Department officials, ROI validations are not completed because CPC funding is awarded for the 2-year project implementation period only, and the Military Departments typically do not have funds remaining for validating ROIs after the projects are completed.
- If the ROI validations of finished projects are not completed, the Corrosion Office will not have needed data to determine how to best invest limited CPC funds.
- We recommended in December 2010 that the Corrosion Office coordinate with the Military Departments' corrosion control and prevention executives to complete their ROI validations. DOD concurred with this recommendation. In March 2011, Corrosion Office officials outlined the steps they plan to take to implement this recommendation, which include assisting the Military Departments in documenting and estimating the ROIs and, when needed, providing funds to complete ROI validations.

¹³GAO-11-84.

¹⁴For these 10 projects, the average ROI ratio was validated as 12:1, slightly higher than the average estimated ROI of 11:1 for these projects when they were originally proposed. While the agreement between the average estimated and validated ROIs is encouraging, the small number of projects—overall and by type of project—does not allow these findings to be generalized.



Conclusions

- The DOD corrosion report accompanying its FY 2012 CPC budget request for activities and projects again provided Congress with the types of mandated information that it has used in prior years to address prior mandated requirements for information. However, DOD's corrosion report did not provide all of the additional information mandated in recently enacted legislation.
- The Military Departments' reports also provided some mandated information but did not fully address all requirements for information first mandated in fiscal year 2009.
- With a full year to gather and prepare the information for next year's annual report on proposed DOD-wide CPC projects and activities, DOD and the Military Departments should be better positioned to address all the information needs of Congress, as well as the needs of senior DOD officials.
- Providing all of the required information and working with the Military Departments to validate the ROIs would give DOD leaders and Congress needed information to better determine the size of the Corrosion Office's budget.



Recommendations for Executive Action

- To ensure that Congress has all of the information it needs to exercise its oversight responsibilities, we recommend that the Secretary of Defense take the following two actions:
 - Direct the Under Secretary of Defense for Acquisition, Technology and Logistics to include all required elements in DOD's future corrosion reports.
 - Direct the Secretary of each Military Department to provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executive. As the Military Departments develop the elements needed to provide the full funding levels, they should include the information on these elements in their annual reports.



Agency Comments and Our Evaluation

- In its written comments, DOD concurred with both recommendations.
 - DOD concurred that it should include all required elements in DOD's future corrosion reports. DOD stated that the report, as submitted, provides Congress with all the information it needs to exercise its oversight responsibilities. DOD also commented that budgets for both activities and projects were provided and that activities are being executed in accordance with the *DOD Corrosion Prevention and Mitigation Strategic Plan*. However, as we stated earlier, DOD's corrosion report did not include, for the current and previous fiscal year, the amount of funds requested in the budget compared to the funding requirements for each project or activity in the strategy. Therefore, DOD should include this information in its FY 2013 report.
 - DOD concurred that it should provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executive and that as the Military Departments develop the elements needed to provide the full funding levels, they should include the information on these elements in their annual reports. DOD commented that it will, in future reports, provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executive, as described in DOD guidance. DOD stated that these funding levels will not include the entire Military Departments' CPC funding requirements because neither the Corrosion Office nor the Military Department corrosion control and prevention executives have oversight or control of the entire CPC budgets.
- We continue to believe that DOD leaders and Congress need all of the required information to exercise their oversight responsibilities. Because neither DOD's nor the Military Departments' reports provided all of the required information, DOD leaders and Congress may not be able to determine the size of the Corrosion Office's budget needed to cost effectively prevent and mitigate corrosion's negative effects.



Related GAO Products

- *Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue.* GAO-11-318SP. Washington, D.C.: March 1, 2011.
- *Defense Management: DOD Needs to Monitor and Assess Corrective Actions Resulting from Its Corrosion Study of the F-35 Joint Strike Fighter.* GAO-11-171R. Washington, D.C.: December 16, 2010.
- *Defense Management: DOD Has a Rigorous Process to Select Corrosion Prevention Projects, but Would Benefit from Clearer Guidance and Validation of Returns on Investment.* GAO-11-84. Washington, D.C.: December 8, 2010.
- *Defense Management: Observations on the Department of Defense's Fiscal Year 2011 Budget Request for Corrosion Prevention and Control.* GAO-10-607R. Washington, D.C.: April 15, 2010.
- *Defense Management: Observations on Department of Defense and Military Service Fiscal Year 2011 Requirements for Corrosion Prevention and Control.* GAO-10-608R. Washington, D.C.: April 15, 2010.
- *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.



Related GAO Products (cont.)

- *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.

Enclosure II: Comments from the Department of Defense



ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

APR 8 2011

Mr. Jack Edwards
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Edwards:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-11-490R, "The Department of Defense's Fiscal Year 2012 Corrosion Prevention and Control Budget Request," dated April 5, 2011 (GAO Code 351587). Detailed comments on the report recommendations are enclosed.

Sincerely,



Daniel J. Dunne
Director,
DoD Corrosion Policy and Oversight

Enclosure:
As stated

**GAO DRAFT REPORT DATED APRIL 5, 2011
GAO-11-490R (GAO CODE 351587)**

**“The Department of Defense’s Fiscal Year 2012 Corrosion Prevention and
Control Budget Request”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS**

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics to include all required elements in DOD's future corrosion reports.

DoD RESPONSE: Concur. However, the DoD believes that the report as submitted provides the Congress with all of the information it needs to exercise its oversight responsibilities. Budgets for both activities and projects were provided. Activities are being executed in accordance with the *DoD Corrosion Prevention and Mitigation Strategic Plan*, dated February 2011. Projects are being executed based on input from the Military Departments in accordance with an established process that has been characterized by the GAO as “rigorous” in report GAO-11-84 dated December 2010.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense direct the Secretary of each Military Department to provide the required information on funding levels necessary to carry out all duties of the corrosion control and prevention executive. As the Military Departments develop the elements needed to provide the full funding levels, they should include the information on these elements in their annual reports.

DoD RESPONSE: Concur. In future reports, DoD will provide funding levels necessary to execute the duties of the Military Department’s corrosion control and prevention executives as described in DODI 5000.67. These funding levels will not include the entire Military Departments’ corrosion prevention and control funding requirements. Neither CPO nor the Military Department CCPE’s have oversight or control of the entire corrosion prevention control budgets of DoD per 10 USC 133.

Enclosure III: GAO Contact and Staff Acknowledgments

GAO Contact

Jack Edwards, (202) 512-8246 or edwardsj@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Suzanne Wren, Assistant Director; Amanda Harris; Charles Perdue; Steven Putansu; Michael Shaughnessy; Chris Turner; and Erik Wilkins-McKee made key contributions to this report.

(351587)

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