

GAO

Report to the Subcommittee on  
Defense, Committee on Appropriations,  
U.S. Senate

December 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



G A O

Accountability \* Integrity \* Reliability

Highlights of [GAO-11-84](#), a report to the Subcommittee on Defense, Committee on Appropriations, U.S. Senate

## Why GAO Did This Study

Corrosion costs DOD over \$23 billion annually, affects both equipment and facilities, and threatens personnel safety. DOD has taken steps to improve its corrosion prevention and control (CPC) efforts. These efforts include reorganizing the DOD-wide Corrosion Office and instituting Corrosion Executive positions in each of the military departments. In response to the Senate Appropriations Committee Report accompanying the fiscal year 2010 DOD appropriations bill, GAO evaluated to what extent (1) the Corrosion Executives are involved in preparing CPC project proposals for submission, (2) the Corrosion Office has created a process to review and select projects for funding, and (3) the military departments have validated the return on investment (ROI) for funded projects. GAO also reviewed the process the Corrosion Office uses to determine the CPC activities that it will fund. To carry out this study, GAO observed project selection panel meetings, interviewed corrosion officials, and reviewed documents and project proposals.

## What GAO Recommends

GAO is making recommendations to: 1) improve the oversight of proposals submitted for funding consideration, 2) communicate more clearly the criteria used to select which projects will be funded, and 3) fund and complete ROI validations.

In written comments on this report, DOD disagreed with the first two recommendations and agreed with the third, citing alternatives or differing views. GAO believes the recommendations remain valid.

View [GAO-11-84](#) or key components. For more information, contact Jack Edwards at (202) 512-8246 or [edwardsj@gao.gov](mailto:edwardsj@gao.gov).

## DEFENSE MANAGEMENT

### DOD Has a Rigorous Process to Select Corrosion Prevention Projects, but Would Benefit from Clearer Guidance and Validation of Returns on Investment

## What GAO Found

The acceptance of the military departments' CPC proposals varied relative to the types of projects and nature of review that the military Corrosion Executives required before the proposals were submitted to the Corrosion Office for funding consideration. DOD guidance provides that Corrosion Executives coordinate CPC actions, including submitting corrosion project opportunities. Prior to submitting the proposals for a preliminary evaluation by the Corrosion Office's project selection panel, Army and Navy Corrosion Executives and staffs reviewed proposal summaries and provided feedback to the authors. The Air Force did not perform a review that included pre-submission feedback. Later, during a preliminary evaluation, the Corrosion Office's project selection panel determined that a much higher percentage of Army and Navy proposals were acceptable than those submitted by the Air Force. A selection panel member told us that because the Air Force did not perform a pre-submission review of proposals, deficiencies in those proposals were not corrected prior to the panel's evaluation.

DOD has criteria and a rigorous multistep procedure for evaluating proposals, but some military department stakeholders indicated that this information is not communicated clearly. Previously, GAO noted involving stakeholders helps agencies target resources to the highest priorities. Criteria used for the project selection panel to evaluate proposed projects are not clearly identified in DOD's *Corrosion Prevention and Mitigation Strategic Plan*, and some project managers said that they were unfamiliar with how projects were evaluated. While the Corrosion Office already takes actions, such as providing in-depth feedback to proposals' authors and assembling corrosion experts to participate on the selection panel, unclear communications on some issues could adversely affect authors' abilities to prepare effective project proposals.

The military departments are late in validating ROIs for some completed projects. The *Strategic Plan* suggests that follow-on reviews with validated ROIs are required for completed projects within 3 years after full project implementation. Project managers have completed these reviews for 10 of the 28 implemented projects funded in fiscal year 2005, with 8 of the 10 completed reviews performed by one Army command. Corrosion Executives told GAO that because CPC funding is awarded only for the 2-year project implementation period, they typically do not have funds remaining for validating ROIs after projects are completed. If the ROI validations of completed projects are not performed, the Corrosion Office will not have needed data to adjust project selection criteria in order to invest limited CPC funds in the types of projects with the greatest potential benefits.

The Corrosion Office created Product Teams to implement DOD-wide CPC activities in seven areas. Using volunteers and a budget averaging around \$4.5 million per year, the Teams propose activities, such as determining the costs of corrosion and DOD-wide specifications for CPC products, which are then selected for funding by the Director of the Corrosion Office. The Corrosion Executives are becoming more involved in Team activities.

---

# Contents

---

<b>Letter</b>		1
	Background	5
	Acceptance of Project Proposal Submissions to the Corrosion Office Often Varies by the Nature of Corrosion Executives' Oversight and Review and Type of Project Proposed	8
	The Corrosion Office Has a Rigorous Process to Evaluate CPC Proposals for Funding, but Selection Criteria Are Not Clearly Communicated	11
	The Military Departments Have Not Determined the Benefits of About Two Thirds of the Completed Corrosion Projects	17
	Product Teams Propose and Implement DOD-wide CPC Activities, and the Staffing Process for the Teams Is Evolving	20
	Conclusions	24
	Recommendations for Executive Action	25
	Agency Comments and Our Evaluation	25
<b>Appendix I</b>	<b>Scope and Methodology</b>	29
<b>Appendix II</b>	<b>Information on Selected Corrosion Prevention and Control Projects</b>	32
<b>Appendix III</b>	<b>Comments from the Department of Defense</b>	35
<b>Appendix IV</b>	<b>GAO Contact and Staff Acknowledgments</b>	41
<b>Related GAO Products</b>		42
<b>Tables</b>		
	Table 1: Results of Preliminary Evaluation of Fiscal Year 2011 CPC Project Proposals	10
	Table 2: Funding of the Product Teams for Fiscal Years 2005 through 2010	21

---

---

## Figures

Figure 1: Percentage of Accepted CPC Projects Receiving Corrosion Office Funding (Fiscal Years 2005 through 2010)	7
Figure 2: Estimated Average ROI for Funded CPC Projects (Fiscal Years 2005 through 2010)	19

---

## Abbreviations

Corrosion Executive Corrosion Office	Corrosion Control and Prevention Executive Office of Corrosion Policy and Oversight
CPC	corrosion prevention and control
DOD	Department of Defense
Product Teams	Working Integrated Product Teams
ROI	return on investment

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



G A O

Accountability \* Integrity \* Reliability

United States Government Accountability Office  
Washington, DC 20548

---

December 8, 2010

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

In 2010, the Department of Defense (DOD) estimated that corrosion costs the department over \$23 billion annually. Moreover, the Defense Science Board Task Force estimated in a 2004 report that 30 percent of corrosion costs could be avoided through proper investment in prevention and mitigation of corrosion during design, manufacture, and sustainment.<sup>1</sup> 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.<sup>2</sup> Corrosion also affects military readiness, taking critical systems out of action and creating safety hazards. For example, an October 2009 study estimated that corrosion is responsible for up to 16 percent of the unavailability of the equipment reviewed in the study.<sup>3</sup> Also, our April 2007 report noted that the Army attributed over 50 aircraft accidents and 12 fatalities to corrosion since 1985.<sup>4</sup> According to DOD, increased prevention and control efforts are needed to adequately address the wide-ranging and expensive effects of corrosion on equipment and infrastructure.

---

<sup>1</sup> Department of Defense, Under Secretary of Defense (Acquisition, Technology and Logistics), *Defense Science Board Report on Corrosion Control* (Washington, D.C.: 2004).

<sup>2</sup> Corrosion 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.

<sup>3</sup> LMI, *The Impact of Corrosion on the Availability of DOD Weapon Systems and Infrastructure* (McLean, Virginia: 2009).

<sup>4</sup> GAO, *Defense Management: High-Level Leadership Commitment and Actions Are Needed to Address Corrosion Issues*, [GAO-07-618](#) (Washington, D.C.: Apr. 30, 2007).

---

Congress has enacted several legislative requirements to address the high cost of corrosion's negative effects on military equipment and infrastructure. To fulfill these requirements, DOD created the Office of Corrosion Policy and Oversight (Corrosion Office) in 2003. The Corrosion Office is responsible for the prevention and mitigation of corrosion of military equipment and infrastructure.<sup>5</sup> The National Defense Authorization Act for Fiscal Year 2008, which amended 10 U.S.C. § 2228, specified organizational changes to the Corrosion Office and added new reporting requirements.<sup>6</sup> These changes included assigning the former duties of the DOD-wide Corrosion Executive to the newly established position of Director of the Corrosion Office and mandating that the incumbent report directly to the Under Secretary of Defense for Acquisition, Technology and Logistics. Additionally, the Act required DOD to annually report on corrosion funding to Congress. The Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 required each military department to designate a Corrosion Control and Prevention Executive (Corrosion Executive) to be the senior official in the department with responsibility for coordinating corrosion prevention and control (CPC) program activities, and also required each Corrosion Executive to submit an annual report of recommendations regarding CPC actions and funding levels to the Secretary of Defense.<sup>7</sup>

We conducted this work in response to the Senate Appropriations Committee Report accompanying the fiscal year 2010 DOD appropriations bill.<sup>8</sup> In the Report the Committee directed us to review selected CPC projects and activities, identify the methodology and processes the military services use to forward candidate projects for funding consideration, and determine why the military services' entire estimated

---

<sup>5</sup> The Bob Stump National Defense Authorization Act for Fiscal Year 2003 required the Secretary of Defense to designate an officer, employee, board, or committee as the individual or office with this responsibility. *See* Pub. L. No. 107-314, § 1067 (2002) (codified at 10 U.S.C. § 2228). The National Defense Authorization Act for Fiscal Year 2008 amended this requirement by designating the Director of Corrosion Policy and Oversight as the official with these responsibilities. *See* Pub. L. No. 110-181, § 371 (2008) (amending § 2228).

<sup>6</sup> Pub. L. No. 110-181, § 371 (2008) (amending 10 U.S.C. § 2228).

<sup>7</sup> Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, Pub. L. No. 110-417, § 903 (2008).

<sup>8</sup> S. Rep. No. 111-74, at 155-156 (2009).

---

requirements are not reflected in the overall DOD funding requirement.<sup>9</sup> In April 2010, we provided observations on the process that DOD and the military departments use to estimate funding requirements for CPC projects and activities, and the reasons why DOD's funding requirement did not reflect the estimated requirements identified by the military departments.<sup>10</sup> This report discusses our evaluation of the extent

- the Corrosion Executives are involved in preparing CPC project proposals for submission,
- the Corrosion Office has created a process to review and select projects for funding, and
- the military departments have validated the return on investment (ROI) for funded projects.

We also discuss the process used by the Corrosion Office to determine the CPC activities that it will fund.

In performing our work we used data on projects that the military departments submitted to the Corrosion Office for funding consideration in fiscal years 2005 through 2010. We assessed the reliability of the data by interviewing staff knowledgeable about the data and the system that produces them and by testing for missing data, outliers, or obvious errors. We determined the data were sufficiently reliable for the purposes of determining how the military departments decide which projects to submit to the Corrosion Office for funding consideration and how the Corrosion Office decides which projects to approve for funding. To enhance our understanding of the review and decision-making processes, we selected and reviewed a nonprobability sample of 24 project proposals and related information that the military departments submitted in fiscal years 2006, 2008, or 2010. To select this sample, we used the following four considerations

- the year the project was submitted to the Corrosion Office,

---

<sup>9</sup> Although the Report language refers to the military services, it is the Military Department Corrosion Control and Prevention Executives who, with coordination through the proper military department chain of command, provide information on corrosion project opportunities to the Director of the Corrosion Office. Our focus in this report is therefore on the military departments.

<sup>10</sup> GAO, *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.: Apr. 15, 2010).

- 
- whether the project was accepted or not accepted by the Corrosion Office,
  - the Corrosion Office's and military department's combined project cost, and
  - the estimated return on investment (ROI) of the project.

As part of these project reviews, we interviewed six officials who were the principal authors and points of contact for 11 of the projects in our sample. We additionally met with each Corrosion Executive to discuss the steps they and their staffs took to oversee CPC efforts for their respective military department. We met with officials at the Corrosion Office to discuss the CPC project selection process and also observed two meetings of the CPC project selection panel as part of the fiscal year 2011 project selection process. We observed meetings where the panel provided feedback to military department representatives regarding the panel's observations on the project proposals submitted for fiscal year 2011 funding consideration. To determine how the military departments validate the ROIs for funded projects, we met with the Corrosion Executives and their staffs, as well as the principal points of contact for 11 of the projects we reviewed. We also obtained the final reports for CPC projects funded in fiscal year 2005 from the Corrosion Office and reviewed these reports to obtain data on estimated and validated ROIs for these projects.<sup>11</sup> We met with representatives from three of the seven CPC Working Integrated Product Teams to understand how CPC activities are formulated, funded, and implemented. Further details on our scope and methodology are included in appendix I.

We conducted this performance audit from April 2010 through December 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.

---

<sup>11</sup> DOD's *Corrosion Prevention and Mitigation Strategic Plan* suggests that follow-on reviews with validated ROIs are required for completed projects within the 3 years after full project implementation. Projects from fiscal year 2005 are the first projects to meet this requirement.

---

## Background

Corrosion, if left unchecked, can degrade the readiness and safety of equipment and has been estimated to cost DOD billions of dollars annually.<sup>12</sup> Using fiscal year 2006 data, DOD noted that it spends approximately \$80 billion each year to maintain its ships, aircraft, strategic missiles, and ground combat and tactical vehicles. Corrosion-related costs of equipment maintenance were estimated to total \$19.4 billion each year, or 24 percent of the total cost of maintenance. In addition, DOD spends approximately \$10 billion to maintain about 577,000 buildings and structures at more than 5,300 sites worldwide. Approximately \$1.9 billion, or 11.7 percent, of these maintenance costs were estimated to be related to corrosion.

The Director of the Corrosion Office is responsible for the prevention and mitigation of corrosion of DOD equipment and infrastructure. The Director's duties include developing and recommending policy guidance on the prevention and mitigation of corrosion to be issued by the Secretary of Defense, reviewing the CPC programs and funding levels proposed by the Secretary of each military department during the annual internal DOD budget review process, and submitting recommendations to the Secretary of Defense regarding those programs and proposed funding levels. In practice, this review includes the process of selecting projects proposed by the military departments for funding. In addition, the Director leads the CPC Integrated Product Team, which is comprised of representatives from the military departments to accomplish the goals and objectives of the Corrosion Office, and includes the seven Working Integrated Product Teams (Product Teams) that implement CPC activities. These seven Product Teams are: policy and requirements; metrics, impact, and sustainment; specifications, standards, and product qualification; training and certification; communications and outreach; science and technology; and facilities. Until fiscal year 2011, the Corrosion Office consisted of the Director and contractor support. The Director told us that 4 full-time staff were expected to be hired in early fiscal year 2011.

The Corrosion Office funds projects and activities aimed at preventing and mitigating corrosion. Projects are specific CPC efforts with the objective of developing and testing new technologies. To receive Corrosion Office funding, the military departments submit project proposals that are evaluated by a panel of experts assembled by the Director of the

---

<sup>12</sup> Department of Defense, Under Secretary of Defense (Acquisition, Technology and Logistics), *DOD Annual Cost of Corrosion* (Washington, D.C.: 2009).

---

Corrosion Office. The Corrosion Office currently funds up to \$500,000 per project, and the military departments pledge complementary funding for each project they propose.<sup>13</sup> The level of military department funding and the estimated ROI are two of the criteria used to evaluate the project proposals. (See app. II for examples of CPC projects.) Activities encompass efforts, such as training and cost studies, to enhance and institutionalize CPC efforts within DOD. These activities are coordinated through the seven Product Teams discussed above. Product Team representatives told us that funding for these activities is centrally coordinated through the Corrosion Office in consultation with the Product Teams.

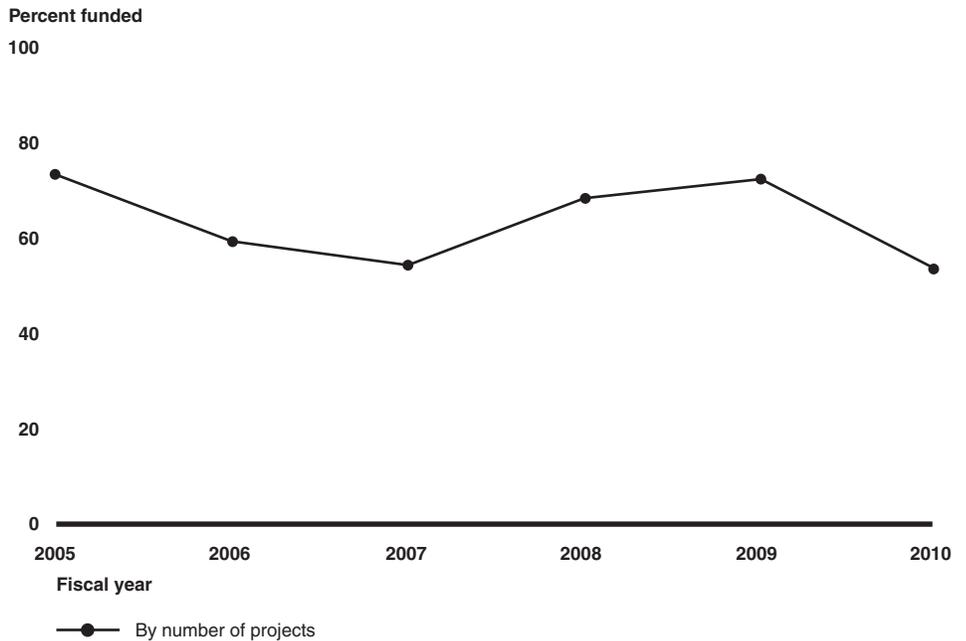
According to the Corrosion Office, constrained budgets and competing requirements to support worldwide military operations have precluded the full funding of CPC projects that have met the requirements for funding. In April 2010, we reported on the funding available to the Corrosion Office for projects and activities.<sup>14</sup> For fiscal years 2005 through 2010, the Corrosion Office accepted 271 CPC projects with funding requests totaling \$206 million, but DOD provided \$129 million, or 63 percent of the funding required for the Corrosion Office to fund all 271 projects. As a result, the Corrosion Office funded 169 CPC projects over this 6 year period. As represented in Figure 1, the historical funding rates for CPC projects have fluctuated during fiscal years 2005 through 2010. During the same 6 year period, the Corrosion Office also funded a total of \$26 million in corrosion-related activities such as training, outreach, and costs of corrosion studies.

---

<sup>13</sup> According to the Corrosion Office, the \$500,000 per project funding limit was introduced for the fiscal year 2006 project selection process to enable more projects to be funded.

<sup>14</sup> GAO, *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); and [GAO-10-608R](#).

**Figure 1: Percentage of Accepted CPC Projects Receiving Corrosion Office Funding (Fiscal Years 2005 through 2010)**



Source: GAO analysis of DOD data.

In April 2010, we reported that the CPC requirements for fiscal year 2011 totaled \$47 million, but the fiscal year 2011 budget identified \$12 million for CPC, leaving an unfunded requirement of about \$35 million.<sup>15</sup> Additionally, we reported that the funding level identified in the fiscal year 2011 budget request could result in a potential cost avoidance of \$418 million. Similarly, multiplying the average estimated ROI by the amount of the unfunded requirements shows that DOD may be missing an opportunity for additional cost avoidance totaling \$1.4 billion by not funding all of its estimated CPC requirements. Both calculations are highly contingent on the accuracy of the estimated ROIs that have not been validated by the military departments. (See the Related GAO Products section at the end of this report for a full listing of our reports on DOD’s CPC program.)

<sup>15</sup> [GAO-10-608R](#).

---

## Acceptance of Project Proposal Submissions to the Corrosion Office Often Varies by the Nature of Corrosion Executives' Oversight and Review and Type of Project Proposed

The acceptance of military departments' CPC project proposals varied relative to the nature of review—if any—that the Corrosion Executives required before proposals were submitted to the Corrosion Office for funding consideration. The military departments have established Corrosion Executives to oversee CPC efforts, but their level of oversight varies. The Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 requires the Corrosion Executive of each military department to serve as the principal point of contact between the military department and the Director of the Corrosion Office.<sup>16</sup> It also requires each Corrosion Executive to submit an annual report to the Secretary of Defense containing recommendations pertaining to the military department's CPC program, including corrosion-related funding levels necessary to carry out all the Corrosion Executive's duties. In addition, DOD Instruction 5000.67, *Prevention and Mitigation of Corrosion on DOD Military Equipment and Infrastructure*, which was updated in February 2010, reflects certain legislative requirements and provides Corrosion Executives with responsibility for certain CPC activities in their military department. It requires the Corrosion Executives to submit CPC project proposals to the Corrosion Office with coordination through the proper military department chain of command, as well as to develop and support an effective CPC program in their military department, evaluate the CPC program's effectiveness, serve as the principal point of contact with the Corrosion Office, and establish a process to review and evaluate the adequacy of CPC planning.

We have reported that a key factor in helping achieve an organization's mission and program results and minimize operational problems is to implement appropriate internal control.<sup>17</sup> Effective internal control also helps in managing change to cope with shifting environments and evolving demands and priorities. Control activities such as the policies, procedures, techniques, and mechanisms that enforce management's directives, are an integral part of an entity's planning, implementing, reviewing, and accountability for stewardship of government resources and achieving effective results. For an entity to run and control its operations, it must also have relevant, reliable, and timely communications relating to internal as well as external events.

---

<sup>16</sup> Pub. L. No. 110-417, § 903 (2008).

<sup>17</sup> GAO, *Internal Control: Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: November 1999).

---

During the annual process of identifying and submitting CPC project proposals for funding consideration, each Corrosion Executive exercises a different level of review prior to submission of the proposals to the Corrosion Office. For example, the Army and Navy Corrosion Executives organized and directed a review of their department's project proposals prior to submitting them to the Corrosion Office for fiscal year 2011 CPC funding, but the Air Force Corrosion Executive's preliminary oversight was more limited.

The Army Corrosion Executive requested the various Army commands to submit abbreviated project proposals 5 weeks prior to the application deadline set by the Corrosion Office. Individuals nominated by the Army commands then reviewed these abbreviated proposals by using criteria the Army adapted from the project selection evaluation charts included in DOD's *Corrosion Prevention and Mitigation Strategic Plan*. The Corrosion Executive's office provided the results from this internal peer review to the authors of the proposed projects, so that comments obtained from the review could be incorporated into the project proposals before the Corrosion Executive submitted the projects to the Corrosion Office. Army staff told us that some authors withdrew their project proposals following this review, based on the feedback they received.

The Navy Corrosion Executive directed a similar review process, requiring that a one-page synopsis of each project proposal be prepared and submitted to him 7 weeks prior to the Corrosion Office deadline. The Corrosion Executive assembled a panel with members from each of the Navy's system commands to review the synopses. Specifically, individuals from other system commands reviewed and scored the synopses from the remaining commands based on the synopses' alignment with the Navy's priorities, and the estimated ROI. The Navy Corrosion Executive then ranked the synopses based on the aggregate scores received from each reviewer. A Navy project manager told us that receiving a low ranking did not preclude project proposals from being submitted to the Corrosion Office, because the Navy Corrosion Executive did not discourage the managers of these projects from submitting the full proposal to the Corrosion Office for funding consideration.

We found that the Air Force Corrosion Executive did not direct a similar level of review and feedback for project proposals before they were submitted to the Corrosion Office for fiscal year 2011 funding. The Air Force Corrosion Executive requested that the Air Force major commands submit project proposals to his office prior to submitting project proposals to the Corrosion Office. However, the Air Force Corrosion Executive did

not establish a process to review the proposals and provide preliminary feedback for revising them before submission to the Corrosion Office. The Air Force Corrosion Executive told us that he did not conduct a review of the proposals because, due to the historically low rate of Air Force CPC projects accepted for funding, he thought it was appropriate to submit all of the Air Force proposals to the Corrosion Office. He also said that since the Corrosion Office is more familiar with the criteria used to judge the proposals he did not want to reject any project proposals.

According to a member of the Corrosion Office's project selection panel, the additional steps taken by Army and Navy Corrosion Executives to ensure that their military department's proposals met the panel's criteria were contributing factors for a higher acceptance rate for Army and Navy proposals. The project selection panel found during the preliminary evaluation step of the proposal selection process that 66 percent of the Army project proposals and 61 percent of the Navy project proposals submitted for fiscal year 2011 funding were acceptable in their current form, while 11 percent of the Air Force projects were considered acceptable (see table 1).

**Table 1: Results of Preliminary Evaluation of Fiscal Year 2011 CPC Project Proposals**

	Number of proposals submitted	Number of proposals judged acceptable	Percentage of proposals judged acceptable
<b>Department of the Army</b>			66%
Facilities	21	14	67%
Weapons	11	7	64%
<b>Department of the Navy</b>			61%
Facilities	10	7	70%
Weapons - ships	6	1	17%
Weapons - air	6	2	33%
Weapons - Marine Corps	9	9	100%
<b>Department of the Air Force</b>			11%
Facilities	9	1	11%
Weapons	9	1	11%
<b>Total</b>	<b>81</b>	<b>42</b>	<b>52%</b>

Source: GAO analysis of OSD data.

The panel member also told us that the Army and Navy fiscal year 2011 proposals were more complete and more effectively addressed the selection criteria than those submitted by the Air Force. For example,

---

most of the Air Force project proposals lacked required information needed for the project selection panel to judge the merits of the proposal. The panel's feedback to the authors of the Air Force project proposals highlighted areas where the provided information was insufficient or incomplete, such as

- the project managers did not follow the project proposal template in the *DOD Corrosion Prevention and Mitigation Strategic Plan*, which includes topics to be addressed in project proposals;
- the contents of the project proposals did not explain the technology demonstration aspects of the project; or
- the project proposals did not include information on matching funds that would be provided by the Air Force.

The project selection panel also concluded that most of the Air Force's fiscal year 2011 project proposals were requests for replacement funds, rather than the technology demonstrations that the Corrosion Office's CPC program is intended to support. Selection panel members questioned if a review had occurred by the Air Force Corrosion Executive because these deficiencies were not identified and corrected prior to submitting the project proposals to the Corrosion Office for funding consideration.

---

## The Corrosion Office Has a Rigorous Process to Evaluate CPC Proposals for Funding, but Selection Criteria Are Not Clearly Communicated

For fiscal year 2011, the Corrosion Office used a rigorous multistep process to review and select CPC project proposals that were acceptable for funding; however, some military department personnel involved in the process did not clearly understand the criteria used to select projects for funding. A project selection panel reviewed submitted project proposals from each military department at two different times. For the preliminary review, the panel used a set of criteria that is different from those used for final project selection later in the process. For the final review, the panel used criteria that are found in the *DOD Corrosion Prevention and Mitigation Strategic Plan* but not explicitly identified as the specific criteria used to evaluate CPC projects. Corrosion Executives and several authors of the project proposals told us they were not clear on what the criteria were or when they were used.

---

## The Corrosion Office Used a Rigorous Multistep Process to Select Projects for Funding

For the fiscal year 2011 project review and selection, we observed that the Corrosion Office used a rigorous multistep process to determine if proposed projects were acceptable for funding.

- **Step 1:** In mid-June 2010, the military departments submitted 81 CPC project proposals to the Corrosion Office, as shown in table 1 above. At this point, Corrosion Office support staff assembled the project plans into binders for review by the project selection panel convened by the Director of the Corrosion Office. The fiscal year 2011 panel had five members: the Director, Corrosion Office (chair); Associate Director, Materials and Structures, Office of the Director, Defense Research & Engineering (vice-chair); and an official from each of the following organizations within the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics): Defense Acquisition University; Installations and Environment; and Logistics and Materiel Readiness, Maintenance Policy and Programs.<sup>18</sup>
- **Step 2:** In mid-July 2010, 2 weeks after project information was provided to the panel, the panel members assembled for their preliminary evaluation of the proposals. This preliminary evaluation, which we observed, was conducted at a meeting immediately prior to the annual DOD Corrosion Forum and resulted in projects being designated as either a “go” (meaning that the projects are deemed acceptable in their current form) or a “no go” (meaning that the projects require additional information or changes in scope to be acceptable to the panel). We observed that the panel used criteria for this preliminary evaluation that are not made available to the submitters of project proposals and are different from those used for final project selection later in the process.<sup>19</sup>
- **Step 3:** Following the preliminary evaluation and during the Corrosion Forum, the panel held individual feedback sessions with project managers from the military commands, such as Naval Air Systems Command, Army Aviation and Missile Command, and Air Force Civil Engineer Support Agency, so feedback could be done in person. The

---

<sup>18</sup> The panel member from Logistics and Materiel Readiness, Maintenance Policy and Programs did not participate in the project selection meetings we observed.

<sup>19</sup> The criteria used for the preliminary evaluation include whether the proposed project requires greater than \$500,000 of Corrosion Office funds to complete, uses similar technology to a previously approved project, or is anticipated to take more than 2 years to complete. The preliminary evaluation did not consider the joint applicability of the project, but this was a criterion in the final project evaluation.

---

panel provided feedback on each project, regardless of whether it was designated as a “go” or “no go.” A panel member told us that the panel provided feedback on all projects so that project managers could address—if they choose to do so—any perceived weaknesses in their “go” projects and improve their ranking in the final evaluation, as well as revise the “no go” project submissions. Following the feedback, the project managers had three options: prepare and submit information addressing the feedback provided by the panel, re-submit project proposals in their original form, or remove projects from consideration for that year’s funding process. Project managers told us that they sometimes decide to remove their “no-go” projects from consideration and that the military departments may implement such projects using other funding. A project selection panel member told us that if a project manager decided to modify a project proposal to address the panel’s feedback, this modified proposal was due to the Corrosion Office no later than 2 weeks after the feedback session. Upon receipt of any revised proposals, the panel conducted another review of all proposals (original and resubmitted), which involved each panel member independently scoring the projects on judgmental criteria and providing written comments.<sup>20</sup>

- **Step 4:** In mid-August 2010, Corrosion Office support staff used an analytical tool to rank the projects based on the average of the scores recorded by each panel member for eight criteria: the five judgmental criteria above and three quantitative criteria—ROI, Corrosion Office funding as a percentage of total project cost, and the project performance, or implementation, period.
- **Step 5:** Following the ranking of projects using the analytical tool, the selection panel reconvened for a final evaluation of the projects. The panel arranged the ranked list that resulted from the analytical tool described above into four categories: best, acceptable–prioritized for funding, acceptable–not prioritized, and not acceptable. According to the staff, the “best” projects would likely all be funded, the “acceptable–prioritized for funding” projects would be funded by priority until the Corrosion Office funding is exhausted. Corrosion Office support staff informed the panel that, based on historical funding levels, they anticipated having \$7 million in available funding

---

<sup>20</sup> The judgmental criteria are: joint applicability, readiness impact, safety impact, logistics benefits, and anticipated contribution of the project to reducing the cost of corrosion. Corrosion Office officials told us that they believe the criteria to be clearly identified in the *DOD Corrosion Prevention and Mitigation Strategic Plan*.

---

for CPC projects in fiscal year 2011. The panel identified 30 of the 53 accepted projects that it anticipated would be funded following completion of DOD’s fiscal year 2011 budget process. These 30 projects included the 20 projects categorized as “best” and 10 projects in the “acceptable–prioritized for funding” category. We observed that the panel then reviewed the projects that were within the anticipated funding level to ensure a balance between the number of facilities and weapons projects identified for funding. In the meeting we observed, no adjustments to the final ranking were necessary to ensure this balance.

---

## Criteria Used for Project Selection Are Not Clearly Communicated

Corrosion Office officials told us that projects are evaluated based on the eight criteria that they believed were clearly listed in the DOD *Corrosion Prevention and Mitigation Strategic Plan* (and discussed above), yet some project managers told us they were unaware of these criteria. We have previously reported that a key business practice for performance management is the early and direct involvement of stakeholders.<sup>21</sup> We have also reported that leading results-oriented organizations believe strategic planning is not a static or occasional event but rather a dynamic and inclusive process.<sup>22</sup> For example, we noted that stakeholder involvement is important to help agencies ensure that their efforts and resources are targeted at the highest priorities.

We found that some military department stakeholders—including the Corrosion Executives and project managers who submit project proposals—had limited familiarity with the criteria to evaluate projects for CPC funding. As described above, the selection panel used a different set of criteria to make the preliminary “go/no-go” decision than the set used for the final evaluation and decision. Corrosion Office officials told us that they believed these criteria were clearly listed in the DOD *Corrosion Prevention and Mitigation Strategic Plan*, but we found that only some of the criteria used to evaluate CPC project proposals were clearly found in the *Strategic Plan*. Further, the criteria identified by the Corrosion Office officials were grouped in the *Strategic Plan* with other criteria not used for the project selection process. Two of the six project managers with whom we met told us that they were unfamiliar with the criteria used to

---

<sup>21</sup> GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C.: July 2, 2003).

<sup>22</sup> GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-118 (Washington, D.C.: June 1996).

---

assess CPC projects. The other four project managers said that they became familiar with the criteria by attending the DOD Corrosion Forums, discussing projects with the panel during previous years' feedback sessions, or learning about the criteria from other project managers—not by reading the DOD *Corrosion Prevention and Mitigation Strategic Plan*. Some project managers told us that project managers who are new to the process of applying for CPC funding would have difficulty understanding the criteria sufficiently to prepare a successful project proposal. Also, the Corrosion Executives told us that they were unfamiliar with the criteria used by the project selection panel to prioritize projects for funding. For example, the Air Force Corrosion Executive told us that he did not review CPC projects prior to submitting them to the Corrosion Office for funding consideration because he was not sufficiently familiar with the criteria used by the Corrosion Office to select projects.

During our observations of the project selection panel process, we identified several conditions that show communication between the Corrosion Office and the military department stakeholders is not as clear as it could be.

- Criteria used for project selection are not clearly identified in the *Corrosion Prevention and Mitigation Strategic Plan*. The *Strategic Plan* includes an attachment with seven project assessment charts that the *Strategic Plan* states are “not to be filled out and submitted” with the project proposal and “will not be used to score projects, although they may be used as a guide” for the preliminary and final project evaluations. However, we observed the project selection panel using one of the topics described in the assessment charts (ROI) to make project acceptance decisions.
- Further, it appeared that certain criteria were more important for project acceptance than others, even though this difference in importance was not identified in the *Strategic Plan*. For example, during the project selection meetings we observed, the proposed projects' estimated ROI appeared to be a very important criterion in the panel's decision-making process. Also, we observed that the ratio of funding requested from the Corrosion Office to that provided by the military department was often cited by the project selection panel as a

---

reason for scoring a project higher or lower, even though the *Strategic Plan* does not explicitly mention this criterion.<sup>23</sup>

- The panel also assessed some projects using criteria that were not listed in the *Corrosion Prevention and Mitigation Strategic Plan*. Specifically, the extent to which past projects had used similar technology and the extent to which a proposed project's location previously experienced difficulties with project implementation both factored in part into the selection panel's decisions about whether to accept projects for funding, even though these criteria are not listed in the *Strategic Plan*.<sup>24</sup>
- The project selection process did not incorporate the priorities of the military departments, even though the Navy provided this information to the panel for the fiscal year 2011 selection process. Corrosion Executives and project managers told us they believed that it was appropriate for the project selection panel to consider the priorities of the military departments, as each department was required to provide matching funds for proposed projects. However, a selection panel member and Corrosion Office officials told us that they disagreed with this view, and added that the CPC program was intended as a technology demonstration program with the goal of awarding funds to the most competitive projects, regardless of department priorities.

The military department stakeholders' limited knowledge and understanding of the selection criteria could be a challenge for the Corrosion Office in accomplishing the stated purpose of the *Strategic Plan* to articulate policies, strategies, objectives, and plans that will ensure an effective, standardized, affordable DOD-wide approach to prevent, detect, and treat corrosion and its effects on military equipment and infrastructure. This situation makes it difficult for stakeholders to craft effective project proposals because they are unsure about the criteria that

---

<sup>23</sup> The *strategic plan* does not mention that the ratio of Corrosion Office funding requested to military department matching funds will be used to evaluate projects. Instead a concept called "management support" is found, and proposals where "management actively supports" the project are categorized as "low risk." Although active management support includes resources such as funding, other resources are also listed.

<sup>24</sup> Project managers told us that project proposals were rejected due to previously funded technologies being proposed for new projects. They added that this severely limited their ability to develop corrosion prevention technologies. The DOD *Corrosion Prevention and Mitigation Strategic Plan* categorizes projects that use "mature technology" as "low risk" while projects with "undemonstrated technology" are categorized as "high risk."

---

the project selection panel uses to make decisions on which projects to accept for funding.

---

## The Military Departments Have Not Determined the Benefits of About Two Thirds of the Completed Corrosion Projects

The military departments have completed a third of their required ROI validations for projects funded in fiscal year 2005, but completion of the remaining projects' validations for that year is behind schedule. Guidance in the *DOD Corrosion Prevention and Mitigation Strategic Plan* describes the steps to be taken to initially estimate the ROIs for CPC projects submitted for funding by the Corrosion Office. These estimation steps include (1) calculating the project costs—such as up-front investment costs and operating and support costs, (2) calculating the benefits that are expected to result from the project—such as reduction of costs like maintenance hours and inventory costs, and (3) calculating the net present value of the annual costs and benefits over the projected service life of the proposed technology.<sup>25</sup>

The *DOD Corrosion Prevention and Mitigation Strategic Plan* notes that follow-on reviews of completed projects are required and that the reviews are to focus on validating the project's ROI. Corrosion Office officials told us that because the CPC projects are generally funded for 2 years of implementation and ROI validations are required within 3 years of completing the project's implementation, reviews for projects funded in fiscal year 2005 are due by the end of fiscal year 2010.<sup>26</sup> The ROI validations consist of

- reviewing assumptions used earlier in computing the estimated ROI;
- updating the costs and benefits associated with the new technology resulting from the project;
- recalculating the ROI based on validated data; and

---

<sup>25</sup> The *Strategic Plan* includes a template spreadsheet for project managers to use to calculate the net present value of the projects. This template accounts for the time value of money by discounting the future benefits expected by the project in terms of their net present value, and computes the ratio of these benefits to the present value of the costs. The discount rate used by the template is 7 percent, recommended by Office of Management and Budget, *Circular No. A-94: Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs* (Washington, D.C.: 1992), for use in analyzing benefits and costs of public investments.

<sup>26</sup> The *DOD Corrosion Prevention and Mitigation Strategic Plan* states that data “should be” updated after 2 or 3 years of actually using the technology (following the 2-year implementation period). Corrosion Office officials told us that they expected the validations to be completed within 5 years of initial project funding.

- 
- providing an assessment of the difference, if any, between the estimated ROI and the validated ROI.

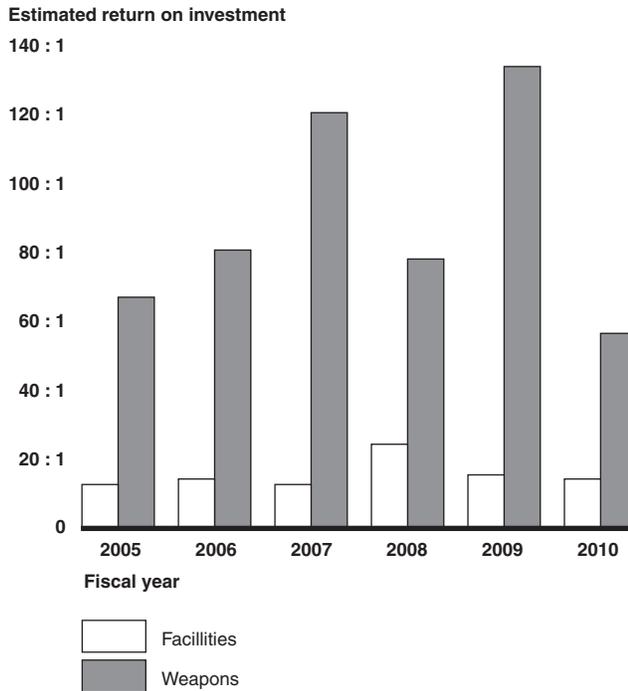
The military departments have completed these reviews, including the ROI validations, for 10 (36 percent) of the 28 implemented projects funded in fiscal year 2005. For these 10 projects, the average ROI ratio was validated as 12:1, slightly higher than the average estimated ROI of 11:1 for these projects 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.

Nine of these ten CPC projects with validated ROIs were focused on corrosion in facilities, and facilities projects accepted by the Corrosion Office for funding have historically had lower estimated ROIs than CPC equipment projects.<sup>27</sup> Specifically, for CPC projects funded in fiscal year 2005, the facilities projects had an estimated average ROI of 13:1, while the equipment projects had an estimated average ROI of 67:1. Figure 2 shows the estimated average ROIs for projects funded in fiscal years 2005 through 2010.

---

<sup>27</sup> One fiscal year 2005 weapons project has completed ROI validation. This Marine Corps project's ROI increased from an estimated 15:1 to a validated 17:1.

**Figure 2: Estimated Average ROI for Funded CPC Projects (Fiscal Years 2005 through 2010)**



Source: GAO analysis of DOD Corrosion Office data.

Both Corrosion Office and military department officials conceded that they are behind schedule on completing ROI validations for fiscal year 2005 projects. Army and Navy corrosion officials told us that, because CPC funding is awarded for a 2-year project implementation period, they typically do not have sufficient funds remaining for validating the ROI after projects are implemented. However, the Army group that conducts CPC projects for facilities has completed 8 of its 9 required ROI validations for projects funded in fiscal year 2005. According to an Army official, this group has historically been allocated \$5 million annually for CPC activities. The Corrosion Office Director told us they are aware of the military departments' difficulties in completing the validations and are considering budgeting DOD-wide CPC funds for ROI validation. If this action is taken, funding would go to the Product Team responsible for CPC metrics for the team to allocate to ensure completion of the validations.

Because the military departments have not completed the required validations of ROI estimates, DOD and the military departments are unable

---

to fully demonstrate the costs and benefits of the CPC projects. One project selection panel member told us that the lack of completed ROI validations makes it more difficult for the panel to make decisions about how to change project selection criteria to invest limited funds in the types of projects with the greatest benefits. Moreover, the continued access to limited evaluative data prevents DOD from making better informed decisions about the amount of funding for the Corrosion Office's CPC program, as well as where best to invest CPC funds.

---

## Product Teams Propose and Implement DOD-wide CPC Activities, and the Staffing Process for the Teams Is Evolving

The Corrosion Office has created seven Product Teams to propose and implement DOD-wide CPC activities in seven areas, as discussed earlier. Using volunteers from the military departments, the Product Teams propose activities, such as determining the costs of corrosion, which are then selected for funding. In the past, product team members served on an informal voluntary basis with little involvement from the military departments. However, now that each department has a Corrosion Executive, the process for selecting the Product Teams' members is changing.

---

## Product Teams Implement CPC Activities

According to a Product Team member, the Product Teams convene during the DOD Corrosion Forums held twice each year and coordinate activities by email and through the Corrosion Office Web site during the rest of the year. For example, at the July 2010 DOD Corrosion Forum that we observed, the Product Teams presented their activities to the attendees, discussed their progress on the activities, and prepared a set of goals for actions to be completed before the next Corrosion Forum. The Product Teams' action plans are included in the DOD *Corrosion Prevention and Mitigation Strategic Plan* and are updated annually. The Product Teams are staffed by representatives from the military departments, and Corrosion Office staff and the Product Team representatives told us that an informal process is used to fund the CPC activities implemented by the Product Teams. Specifically, each year the Director of the Corrosion Office asks the Product Team chairs to provide details on the funding required for the activities planned for the next year. The Director then requests the funds through the annual budget request submitted to the DOD Comptroller.<sup>28</sup> Product Team representatives told us that they were

---

<sup>28</sup> The funding process for CPC activities is described in [GAO-10-608R](#) and [GAO-10-607R](#).

satisfied with the level of funding provided for CPC activities. Table 2 lists the funding for each Product Team for fiscal years 2005 through 2010.

**Table 2: Funding of the Product Teams for Fiscal Years 2005 through 2010**

<b>Product team</b>	<b>6-year total (dollars in millions)</b>	<b>Proportion of funding</b>
Policy and requirements	\$10.0	39%
Metrics, impact, and sustainment	5.8	23
Specifications, standards, and product qualification	3.0	12
Training and certification	3.2	12
Communications and outreach	2.9	11
Science and technology	0.8	3
Facilities <sup>a</sup>	0.0	0
<b>Total</b>	<b>\$25.7</b>	<b>100%</b>

Source: GAO analysis of DOD data.

<sup>a</sup>Corrosion Office staff told us that the Facilities Product Team is not funded directly, but rather through other Product Teams, since their activities fall within each of the other six Product Team areas. Members of the Facilities Product Team also serve on the other six Teams, where their funding needs are addressed.

Note: The figures in Table 2 reflect the fiscal year funding plans, which Corrosion Office officials told us may not be the exact final funding figures and, in a few cases, may not include all of the final funding.

The tasks completed by the Product Teams vary according to their area of specialization. Descriptions of two Product Teams' tasks and impact are used to illustrate the specialization and important information generated.

The Metrics, Impact, and Sustainment Product Team has focused on determining the baseline costs of corrosion for DOD. This task involves establishing a methodology to measure the costs associated with corrosion throughout DOD and applying the methodology to selected components of the military departments (such as Army aviation and missiles, and Navy ships). These efforts resulted in a series of reports that estimated the cost of corrosion for various classes of equipment and facilities across the military departments. A project manager with whom we met told us that these cost studies helped him and his colleagues to identify areas in which to focus their CPC efforts. He told us that the Army Aviation and Missile Command established a corrosion team to focus on cost drivers, following the issuance of a cost study that estimated Army aviation and missile assets had corrosion costs of \$1.6 billion per year. This Product Team plans to update the cost of corrosion for each military department component on a 3-year cycle and to use this information to

---

track the impact of CPC efforts over time. This Product Team also has ongoing efforts to measure the impact of corrosion on readiness. A preliminary report, published in October 2009, concluded that corrosion-related factors can cause asset unavailability of up to 16 percent, with the greatest impact occurring on aviation assets. One Product Team representative told us that (1) their studies on corrosion costs were completed prior to the Corrosion Executives' being established at the military departments and (2) the Product Team plans to consult with the Corrosion Executives to incorporate their input into future updates to the cost studies. He told us that he expected this would have a positive impact at the military departments.

In addition, the Specifications, Standards, and Product Qualification Product Team has developed a Web-based tool to help suppliers match their products with existing specifications and standards used by DOD. A Product Team representative told us that this activity is expected to result in improved technologies and products available to the DOD maintenance community for use in preventing corrosion. Additionally, the Product Team representative told us that product specifications are required to be updated every 2–5 years and that these updates cost DOD up to \$20,000 each. He told us that there are over 800 corrosion-related product specifications, such as information on what types of treatments, primers, and paints are to be applied to a particular material in a given situation. Because of the large number of specifications involved and the cost of revising each of them, this Product Team has focused its efforts on assembling a list of 38 “high-risk” specifications that are given priority for funding.

---

### Staffing of the Product Teams Is Evolving to Incorporate the Corrosion Executives and Their Inputs

The Corrosion Executives of the military departments are responsible for supporting the Product Teams, which are part of the CPC Integrated Product Team, and the Product Team staffing process is evolving to recognize their emerging roles and responsibilities. Since February 2010, the Corrosion Executives have been required by DOD Instruction to support the Product Team process by designating trained or qualified representatives.<sup>29</sup> According to the DOD *Corrosion Prevention and Mitigation Strategic Plan*, the Director of the Corrosion Office manages and coordinates the CPC Integrated Product Team, which includes the

---

<sup>29</sup> Department of Defense Instruction 5000.67, *Prevention and Mitigation of Corrosion on DOD Military Equipment and Infrastructure* (Feb. 1, 2010).

---

Product Teams. The *Strategic Plan* does not reflect this new requirement for the Corrosion Executives to designate representatives to the Product Teams.

The Corrosion Executives and two of the Product Teams' chairs told us that the process of staffing the Product Teams is changing. According to the Navy Corrosion Executive, in the past, participation on a product team has always been based on individual interest and whether a volunteer had time available to dedicate to a Product Team. However, recently, when a Navy representative who was serving as the chair of a Product Team asked to be replaced, the Navy Corrosion Executive nominated another individual from the Navy to serve on the Product Team. The Corrosion Executive communicated the nomination to the Director of the Corrosion Office and the Corrosion Executives of the Army and Air Force, and there were no objections to the change. The Navy Corrosion Executive told us that this example is typical of the informal process currently used to staff the Product Teams. He added that the Corrosion Executives have met with the Director of the Corrosion Office to discuss establishing a Corrosion Board of Directors, which could establish regular meetings between the Corrosion Executives and the Director of the Corrosion Office to discuss policy issues, including a more formal process of staffing the Product Teams.

While the Corrosion Office has, in the past, relied on the Product Team members to represent the position of the military departments on corrosion-related issues, the Corrosion Executives told us they felt that it was now more appropriate for such discussions to occur between the Director of the Corrosion Office and the Corrosion Executives directly. However, the Air Force has recently designated particular Product Team representatives from their military department as authorized to speak for the department in communications with the Corrosion Office. The Air Force Corrosion Executive told us that this designation was intended to prevent any miscommunication between Product Team representatives and the Corrosion Office.

Product Team members with whom we spoke had mixed reactions to the involvement of the Corrosion Executives in the Product Teams. One member told us that he felt it was appropriate for the Product Teams to be staffed by volunteers and was concerned that an increased role by the Corrosion Executives in designating members to the Product Teams would reduce the commitment of the members to the Product Teams. In contrast, another Product Team member told us that he thought it is good for the Corrosion Executives to be more involved, because it is important

---

to ensure that the Corrosion Executives have buy-in to the Product Team activities.

---

## Conclusions

Corrosion significantly impacts DOD in terms of cost, readiness, and safety. The Corrosion Office has made substantial progress toward establishing a coordinated DOD-wide approach to controlling and mitigating corrosion, including

- creating a process to select and fund projects intended to develop and use new CPC technologies,
- quantifying the costs of corrosion, and
- working more closely with the military departments.

Also, each military department has recently designated a legislatively mandated Corrosion Executive to manage and coordinate its corrosion efforts and give increased visibility to this important area of equipment and infrastructure sustainment. However, some continuing uncertainty about how the Corrosion Executives should fulfill their responsibilities may be limiting the positive impact that these positions could have on CPC efforts. For example, the nature and extent of reviews of CPC proposals before they are submitted to the Corrosion Office were cited as a possible cause for differences in the rates at which the military departments' proposed projects are selected for supplemental funding from the Corrosion Office. Similarly, some issues with how clearly the criteria used to select projects for funding are communicated may have negative effects. These effects include significant revisions to project proposals and can result in fewer projects being accepted. If these concerns are not addressed, DOD and the military departments may not achieve maximum benefits from the program and thereby limit the effects of corrosion on the assets that they manage. An additional area of concern is the limited follow-through on the requirement to validate the ROIs that were originally estimated for the funded projects. While the few validations completed thus far document positive results, the small and non-representative group of findings prevents (1) generalization about the impact of other funded projects and (2) efforts to identify and focus future funding toward types of projects that have been shown to have the best likelihood for high payoffs. Also, more complete information on ROIs could provide DOD with an empirical basis for determining how, if at all, the Corrosion Office's funding and activities should be modified.

---

## Recommendations for Executive Action

To ensure that the Department of Defense is taking full advantage of the cost savings that can be achieved by implementing CPC projects, we recommend that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to take the following three actions:

- Update applicable guidance, such as DOD Instruction 5000.67, *Prevention and Mitigation of Corrosion on DOD Military Equipment and Infrastructure* or the *DOD Corrosion Prevention and Mitigation Strategic Plan* to further define the responsibilities of the military departments' Corrosion Executives, to include more specific oversight and review of the project proposals before and during the project selection process.
- Modify the *DOD Corrosion Prevention and Mitigation Strategic Plan* to clearly specify and communicate the criteria used by the panel in evaluating CPC projects for funding consideration. This action should include listing and describing each criterion used by the panel in the preliminary and final project evaluation decisions and discussing how the criteria are to be used by the panel to decide on project acceptability.
- Develop and implement a plan to ensure that return on investment validations are completed as scheduled. This plan should be completed in coordination with the military department Corrosion Executives and include information on the time frame and source of funding required to complete the validations.

---

## Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD agreed with one of our recommendations and did not agree with the other two recommendations. DOD's letter also provided some technical comments that we have incorporated as appropriate. For example, DOD's comments noted some new information that the department had not shared with us previously. Therefore, we revised our report to reflect the fact that DOD now estimates that approximately \$1.9 billion, or 11.7 percent, of facilities' maintenance costs are related to corrosion. We have also revised our report to reflect additional information the department provided on how the Product Teams are staffed. DOD's comments are included in their entirety in appendix III.

DOD did not agree with our recommendation that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to update applicable guidance, such as DOD Instruction

---

5000.67 or the DOD *Corrosion Prevention and Mitigation Strategic Plan*, to further define the responsibilities of the military departments' Corrosion Executives, to include more specific oversight and review of the project proposals before and during the project selection process. In its comments, DOD stated that DOD-level policy documents are high-level documents that delineate responsibilities to carry out the policy. Specific implementing guidance is provided through separate documentation. DOD also stated that the Corrosion Office will be updating the DOD *Corrosion Prevention and Control Planning Guidebook* and beginning the process of converting it into a DOD manual in the next year. In addition, DOD's response noted that the "best practice" of the military department Corrosion Executives conducting their own internal reviews before and during the project selection process will be included in that update. Our recommendation to "update applicable guidance" did not prescribe where the updated guidance should be made. Instead, our recommendation only offered examples of documents that might be modified. We believe that updating the *Guidebook* and converting that to a DOD Manual would provide the needed direction to the military department Corrosion Executives and would meet the intent of our recommendation.

DOD also did not agree with our recommendation that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to modify the DOD *Corrosion Prevention and Mitigation Strategic Plan* to clearly specify and communicate the criteria used by the panel in evaluating CPC projects for funding consideration, as well as listing and describing each criterion used by the panel in the preliminary and final project evaluation decisions. In its response, DOD stated that it disagreed with the implications that the *Strategic Plan* is deficient in clearly specifying the criteria and that added discussion is needed in the *Strategic Plan* regarding how the criteria are used by the panel. DOD commented that the criteria used by the panel and the steps in the process are completely transparent to the [project proposal] authors, and the details have been verbally communicated to stakeholders and are available on line and by e-mail in Appendix D of the *Strategic Plan*. However, DOD also stated: (1) "While not always defined as 'criteria,' all factors considered in the evaluation are articulated in Appendix D" and (2) "While not expressly defined as 'criteria,' these indices are clearly criteria from which anyone submitting a project plan can determine what is likely to improve the chances of a higher DEA [the model used in the panel process] ranking."

In developing our findings, we analyzed the *Strategic Plan* to understand the process and criteria used to evaluate CPC projects for funding;

---

observed the panel proceedings for both the preliminary and final project reviews; discussed the panel process with panel members and military department Corrosion Executives; and discussed their understanding of the process and the criteria used for project evaluation with Corrosion Executives and project authors. The views of the panel members, Corrosion Executives, and project authors, as well as our observations, formed our findings and conclusions and led to our recommendations. Despite the efforts of the Corrosion Office to communicate with its constituency through briefings, emails, and other methods as delineated in DOD's comments, some of those involved in the process reported to us that they did not clearly understand what the criteria were and when they were used in the process. Moreover, DOD's comments quoted above acknowledge that criteria are not always clearly defined in Appendix D of the *Strategic Plan*. We believe our findings are sound and that our recommendation to clearly identify and communicate the criteria is still appropriate. Continued use of unclear criteria could result in wasted personnel time associated with preparing and revising proposals.

DOD agreed with our recommendation that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to develop and implement a plan to ensure that return on investment validations are completed as scheduled. DOD stated that plans are underway to address this requirement.

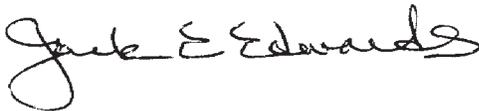
DOD also commented that some of our statements are inaccurate. For example, DOD claims that statements in the draft report regarding the use of different criteria for the preliminary and final project evaluation are not true. However, in our discussions with the panel members and project authors, as well as our observations of the panel process, it was clear that some criteria were used in one evaluation and not in the other. Second, DOD stated that the evaluation team [panel] is not an "ad hoc working group" and the panel members are selected based on experience, expertise, and judgment. In response to DOD's comments, we modified our characterization of the panel. Finally, DOD commented that a statement in the draft report that the process did not consider military department priorities is not accurate. However, as we state in the report, both Corrosion Office staff and a panel member told us that it was not the intent of the CPC program to fund military department priorities, but to award funds to the most competitive projects. Also, DOD's comments state that "the panel does not initially rank projects using the military department priorities" and assert that those priorities have been used by the panel in the final ranking if a military department has two or more projects that are considered to be comparatively equal. However, this is a

---

relatively limited circumstance and, in the view of some stakeholders, does not adequately acknowledge the priorities of the military departments.

---

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 staff have any questions concerning this report, please contact me at (202) 512-8246 or [edwardsj@gao.gov](mailto: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 are listed in appendix IV.



Jack E. Edwards  
Director, Defense Capabilities and Management

---

# Appendix I: Scope and Methodology

---

For the overall context of our analysis, we reviewed relevant laws; Department of Defense (DOD) and military department-specific guidance; the DOD *Corrosion Prevention and Mitigation Strategic Plan*; and reports issued by LMI and the Defense Science Board.

To address our objectives, we met with the Director of the Office of the Secretary of Defense's Corrosion Policy and Oversight Office (Corrosion Office), members of the Corrosion Prevention and Control (CPC) project selection panel assembled by the Director of the Corrosion Office, DOD contractors who assist the Director of the Corrosion Office in managing the CPC program, each military department's Corrosion Executive and their staffs, representatives of three of the seven Working Integrated Product Teams (Product Teams) that coordinate CPC activities, and the six project managers who authored the proposals for 11 of the CPC projects included in our sample.

We obtained data from the Corrosion Office for projects that the military departments had submitted for funding consideration for fiscal years 2005 through 2010. Projects submitted for fiscal year 2011 funding were not in that population because the Corrosion Office had not completed the funding of these projects at the time of our review. We assessed the reliability of the data by (1) interviewing staff knowledgeable about the data and the system that produces them; (2) testing for missing data, outliers, or obvious errors using comparisons to data obtained during prior GAO reviews; and (3) conducting logic tests. We determined that the data were sufficiently reliable for the purposes of our review, which were to determine how the military departments decide which projects to submit to the Corrosion Office for funding consideration, and how a panel of experts and the Corrosion Office decide which projects to approve for funding. To identify corrosion projects for a more detailed review, we selected a nonprobability sample of projects from each of fiscal years 2006, 2008, and 2010 using the following criteria:

- year the project was submitted to the Corrosion Office,
- whether the Corrosion Office did or did not accept the project,
- the Corrosion Office's and military department's combined project cost, and
- the estimated return on investment of the project.

Applying the above criteria, we selected a sample of 24 projects for further review.

To determine the extent the Corrosion Executives are involved in preparing CPC project proposals for submission to the Corrosion Office for funding consideration, we met with each of the Corrosion Executives and their staffs and reviewed the military departments' corrosion reports, to identify whether there was a process at each department to review CPC projects. For projects in our sample, we interviewed six officials who were the principal authors and points of contact for 11 of the projects in our sample. We also reviewed legislation and military department documents, as well as guidance on internal controls, to identify relevant responsibilities and practices that could be used as criteria.

To determine the extent the Corrosion Office has created a process to review and select projects for funding, we interviewed the Corrosion Office staff who manage the process of requesting and receiving project proposals from the military departments. We also interviewed some members of the project selection panel that decided which projects to accept for funding to obtain their observations on the evaluation and selection process. For projects in our sample, we reviewed records of the project selection panel's decisions whether to accept the projects for funding. We observed the project selection panel's preliminary and final project evaluation meetings for fiscal year 2011 projects to determine the current process for evaluating projects. Additionally, we reviewed the project proposal template included in DOD's *Corrosion Prevention and Mitigation Strategic Plan*.

To determine the extent the military departments have validated the return on investment (ROI) of funded projects, we obtained the 10 project review reports that had been completed for fiscal year 2005 projects. We reviewed these reports for data on the validated ROI, the comparison between the validated data and the original estimate, and information on the reasons—if applicable—why the ROI had changed.

To determine how the Corrosion Office determines which CPC activities to fund, we interviewed the chairs of three of the seven Product Teams who manage the CPC activities. We also reviewed materials (e.g., cost studies) that the Product Teams produced, obtained information on the funding for the Product Teams and attended sessions at the DOD Corrosion Forum where Product Team representatives described their ongoing and planned activities.

We conducted this performance audit from April 2010 through December 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.

# Appendix II: Information on Selected Corrosion Prevention and Control Projects

Project name and year of funding request	Project description	Final status
Dehumidification of PATRIOT Missile Systems <i>fiscal year 2008</i>	The Army Aviation and Missile Command implemented this project which had estimated costs of \$95,000 divided equally between the Army and the Corrosion Office and an estimated ROI of 47:1. The project involved using advanced commercial off the shelf forced-air dehumidification technology to dehumidify the air intake for the PATRIOT missile system radar set. The intent of this effort was to reduce the \$46.4 million in annual corrosion costs identified in DOD's May 2007 report on the cost of corrosion for Army aviation and missile equipment.	The Corrosion Office accepted the project and provided \$48,000. Army Aviation and Missile Command staff told us that the project is still being implemented and that some units have deployed to the field.
Laser powder deposition repair of knife edge seals on Navy and Army jet engines <i>fiscal year 2010</i>	The Army Aviation Missile Command and the Naval Air Systems Command submitted a joint project proposal to demonstrate new technology using a laser powder deposition technique to repair knife edge seals that are components within the T700 engine. Almost all of the used (overhauled) seals wear enough to require repair or replacement. This new technology can reduce repair time and replacement of the seals. The T700 engine is used by the Air Force, Army, and the Navy. The military departments did not identify their funding contribution but requested \$30,000 from the Corrosion Office. This Army-led project has an estimated ROI of 7:1.	The Corrosion Office accepted this project and provided \$30,000. Army Aviation and Missile Command staff told us that delays in obtaining Army funding have slowed the implementation of this project.
Avdec sealants for conductive gaskets and floorboard <i>fiscal year 2006</i>	The Naval Air Systems Command submitted this project proposal for a total cost of \$2.7 million, of which 68 percent was requested from the Corrosion Office. The project has an estimated ROI of 14:1. Due to the high rate of corrosion-related replacement of antennas on the Navy's F/A-18 Hornets and the cost of \$2.5 million per year to replace the antennas, the project proposed developing a new generation of sealants to avoid corrosion on aircraft antennas and floorboards.	The project was accepted but not funded by the Corrosion Office. Naval Air Systems Command staff told us that the project was funded by other sources and is in the early stages of implementation.
Advanced aluminum-anodizing system <i>fiscal year 2006</i>	The Navy and Army jointly submitted this project proposal with the Naval Air Systems Command as the lead organization. The project had a total cost of \$470,000, with 74 percent requested from the Corrosion Office. The project's estimated ROI was 2:1. This project would use Metallast technology to help provide more precise control of coating consistency, durability, and corrosion protection to improve the process of anodizing complex parts. Implementation would include installing new computer controlled anodizing systems at two Naval aviation depots, and also assessing the feasibility of a follow-on implementation at an Army depot.	The project was accepted, but not funded by the Corrosion Office. Naval Air Systems Command staff told us that the project was funded by other sources, and has been completed.

**Appendix II: Information on Selected  
Corrosion Prevention and Control Projects**

<b>Project name and year of funding request</b>	<b>Project description</b>	<b>Final status</b>
Sputtered aluminum process for high-strength steel components <i>fiscal year 2006</i>	Naval Air Systems Command submitted this project proposal for a total cost of \$550,000, with 82 percent requested from the Corrosion Office. Its estimated ROI was 1:1. The project proposal addresses implementation of a Plug and Coat sputtered aluminum system on an existing IVD aluminum system at the Naval depot in Jacksonville and to validate potential use in other naval aviation depots. The Plug and Coat system is a proven technical solution to access cavities and other internal surfaces of high-strength steel components and coat them with aluminum to protect against corrosion. The proposal said that the current process (1) consumes excessive man-hours to process parts and (2) leads to additional corrosion of components.	The project was not accepted by the Corrosion Office. Naval Air Systems Command staff told us that the project was not pursued further.
High-efficiency paint spray gun systems <i>fiscal year 2010</i>	The Air Force Research Laboratory submitted this project proposal for a total cost of \$560,000, with 54 percent requested from the Corrosion Office. Its estimated ROI was 605:1. The project plan proposed evaluating and testing several new paint spray gun systems using various types of existing coatings. Ease of use, economics, and the quality and uniformity of the finish coating would be compared for the various systems.	The project was accepted but not funded by the Corrosion Office. According to laboratory officials, the project was not resubmitted because Air Force priorities changed and they did not believe it would rank above the funding line.
Mildew growth/bio-corrosion prevention using an antimicrobial coating on material surfaces <i>fiscal year 2006</i>	The U.S. Army Natick Soldier Center submitted this project proposal for a total cost of \$627,000, with an estimated ROI of 842:1. The project plan proposed demonstrating new processes for use of an alternative to copper 8 coating system now in use for protection against material bio-degradation. The proposed alternative was an environmentally friendly coating system for fabric protection for use on tents, truck covers, helmets, parachutes, and other materials.	This project was accepted by the Corrosion Office but not initially funded. According to a center official, the project was eventually funded by the Corrosion Office. The project is complete and a final project report was recently sent to the Corrosion Office, but no ROI validation was conducted as part of the final report.
Remote monitoring of degradation of steel and reinforced thermoplastic composite bridges <i>fiscal year 2008</i>	The U.S. Army Corps of Engineers, Engineer Research Development Center, submitted this project proposal for a total cost of \$1.6 million split evenly between the Army Corps of Engineers and the Corrosion Office, and estimated an ROI of 6:1. The initial project plan scope focused on testing remote monitoring of Army non-metallic bridges to help identify corrosion or degradation where ordinary nondestructive testing methods cannot identify actively growing defects. The Army expanded the scope of this project at the request of the Corrosion Office. As a result of the Interstate 35W Bridge collapse in Minneapolis, Minnesota, with corrosion and fatigue cracking likely contributors to the catastrophe, the Corrosion Office requested the Army to expand the scope of this project to include both non-metallic and metallic bridges. Because of this, the Corrosion Office waived the \$500,000 funding limit for this project. Engineers stated that part of the project was to monitor the I-20 Bridge near Vicksburg, Mississippi. Expansion of the scope included coordinating with the Department of Transportation, Federal Highways Administration, and the Illinois and Indiana Departments of Transportation.	Prior to the refocusing of the project, engineers told us that it was accepted with some additional clarification required. Engineers were in the process of resubmitting the project proposal when the Corrosion Office requested the wider scope. This project was accepted and funded. The project is three fourths completed.

**Appendix II: Information on Selected  
Corrosion Prevention and Control Projects**

<b>Project name and year of funding request</b>	<b>Project description</b>	<b>Final status</b>
Alkali-activated zinc grouted anode cathodic protection system for concrete reinforcing steel <i>fiscal year 2008</i>	The Naval Facilities Engineering Service Center, Pacific submitted this project proposal for a total cost of \$1.2 million, with \$80,000 requested from the Corrosion Office. Its estimated ROI was 5:1. The project was to demonstrate the effectiveness of a discrete galvanic anode cathodic protection system as a means of mitigating corrosion and increasing the service life during the repair of the reinforced concrete Kilo Wharf at the Naval Base Guam.	This project was accepted and funded. The project is still being implemented. Engineers told us that the project ran into some complications. For example, the sites where the project was installed are not the originally planned sites. The contractor estimates at the originally planned sites were much higher than the government estimates. Because of this the facilities command had to find a different site to use for project implementation.
Alternative backfill/galvanic anode cathodic protection for fuel storage tank bottoms <i>fiscal year 2010</i>	The Naval Facilities Engineering Service Center, Pacific submitted this project proposal for a total cost of \$450,000, with 56 percent requested from the Corrosion Office. The estimated ROI was 2:1. The project was to test results of a technical paper reporting that an improved backfill and/or galvanic anode system may provide better cathodic protection than current impressed systems.	A center official noted that the Navy removed this from funding consideration because (1) it could not find any matching funds and (2) there was no site selected to demonstrate the technology.
High-rate paint stripper <i>fiscal year 2008</i>	The Naval Air Systems Command submitted this project proposal for a total cost of \$940,000, with 29 percent requested from the Corrosion Office. The project's estimated ROI was 2:1. The project was to evaluate alternative paint removal technology that could be used (1) where spot paint removal is necessary for non-destructive inspections and (2) at intermediate and depot-level facilities where larger scale removal of coating is required for inspections and repairs.	This project was not accepted and not funded by the Corrosion Office. A command official noted that funding was obtained from other sources to complete this project.

Source: GAO analysis of DOD documents and interviews with CPC project managers.

Note: This appendix provides short summaries on the status of the 11 projects discussed with the project's program manager.

# Appendix III: Comments from the Department of Defense



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

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

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

NOV 19 2010

Dear Mr. Edwards:

This is the Department of Defense (DOD) response to the GAO Draft Report, GAO-11-84, "DEFENSE MANAGEMENT: DOD Has a Rigorous Process to Select Corrosion Prevention Projects, but Would Benefit from Clearer Guidance and Validation of Returns on Investment," dated October 20, 2010 (GAO Code 351447). Detailed comments on the report recommendations are enclosed.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel J. Dunmire".

Daniel J. Dunmire  
Director,  
DoD Corrosion Policy and Oversight

Enclosure:  
As stated

GAO Draft Report Dated November 2010  
GAO-11-84 (GAO CODE 351447)

**“DEFENSE MANAGEMENT: DOD HAS A RIGOROUS PROCESS TO SELECT  
CORROSION PREVENTION PROJECTS, BUT WOULD BENEFIT FROM  
CLEARER GUIDANCE AND VALIDATION OF RETURNS ON INVESTMENT”**

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

**RECOMMENDATION 1:** The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to update applicable guidance, such as DOD Instruction 5000.67, Prevention and Mitigation of Corrosion on DOD Military Equipment and Infrastructure or the DOD Corrosion Prevention and Mitigation Strategic Plan to further define the responsibilities of the military departments’ Corrosion Executives, to include more specific oversight and review of the project proposals before and during the project selection process. (See page 27/GAO Draft Report.)

**DoD RESPONSE:** Non-conur. DoDI 5000.67 currently states in section E3.b.5. that “The [Military Department Corrosion Control and Prevention Executive] CCPE shall, with coordination through the proper Military Department chain of command: (a) Provide to the Director, CPO, information on...2. Corrosion project opportunities to support the Director’s responsibilities.” Later in section E3.b.5. the CCPE is further given the responsibility to “(e) Support the CPC IPT process by...2. Submitting candidate military equipment and infrastructure corrosion prevention and mitigation projects during the annual project data call.”

DoD level policy documents delineate responsibilities to carry out the policy. They are high level documents. Specific implementing guidance such as “best practices” on how to accomplish those responsibilities are provided through separate documentation such as DoD Guidebooks or Manuals. A more appropriate document to communicate to the CCPEs the benefit of conducting their own review of project proposals before and during the selection process is either a Guidebook or Manual. The Corrosion Policy and Oversight office will be updating the DoD Corrosion Prevention and Control Planning Guidebook and begin the process of converting it into a DoD Manual in the next year. The “best practice” of the CCPEs conducting their own internal reviews before and during the project selection process will be included in that update. It is inappropriate to include such specific implementing guidance in a DoD Instruction.

In addition, two of the military departments are already performing effective reviews of project proposals before submitting to DOD. For example, as stated in the report, DON

has already established an internal process for oversight and evaluation of DON project proposals. This process was developed in accordance with Enclosure 2, Section 3, Paragraph 2, Subsection A of Department of Defense (DOD) Instruction 5000.67 and is reviewed annually to ensure competitive DON project proposal submissions.

In summary, DoDI 5000.67 specifies what the military departments shall do. It does not nor should it specify how the military departments should perform these requirements. As observed in this report, two of the military departments established and executed an effective process for reviewing and submitting project plans without directions from DOD on how to do so.

**RECOMMENDATION 2:** The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to modify the DOD Corrosion Prevention and Mitigation Strategic Plan to clearly specify and communicate the criteria used by the panel in evaluating CPC projects for funding consideration. This action should include listing and describing each criterion used by the panel in the preliminary and final project evaluation decisions and discussing how the criteria are to be used by the panel to decide on project acceptability. (See page 27/GAO Draft Report.)

**DoD RESPONSE:** Non-concur. The Strategic Plan is updated each year to reflect any changes that affect actions to implement requirements and activities specified in the Strategic Plan. We will continue to do so with respect to any changes to project submission and selection, including criteria for selection. However, we disagree with the implication that the Strategic Plan is deficient in clearly specifying the criteria. And we disagree with the suggestion that added discussion is needed in the Strategic Plan regarding how the criteria are used by the panel. We find that a number of findings articulated in this report are erroneous and may have contributed to this conclusion and recommendation.

On page 2, this report states that Military department stakeholders indicated that the procedure for evaluating proposals is not communicated clearly. It also states that criteria used for the project selection panel's evaluation of proposed projects are not clearly identified in the Strategic Plan. The criteria used by the panel and the steps in the process are completely transparent to the authors, and the details have been verbally communicated every year, prior to project submittals, to stakeholders through a briefing and Q&A by the evaluation panel chairman and the Corrosion Policy and Oversight office staff. The staff has also been available to answer any questions at any time, and has done so for people who are genuinely interested in receiving added information and support. The information on evaluation factors and criteria is available on line in the Strategic Plan, therefore project managers have access to the strategic plan where all criteria plus added guidelines are articulated. Furthermore, Appendix D of the Strategic Plan, which is titled **Project Plan Instructions**, has been extracted and distributed

separately to the services via email. That appendix specifies the content of the project plan, and includes a series of paragraphs with specific declarative statements that begin with “describe,” “define,” or other phrases that clearly indicate the requirements of the project plan. There should be no doubt that the information required in the plan will be used to evaluate the need, impact, quality, methodology, investment and cost avoidance of the technology proposed, all of which represent implicit evaluation factors. On pages 14 and 17, this report states that only some of the criteria used to evaluate proposals were clearly found in the Strategic Plan and that some criteria used by corrosion officials were grouped with other criteria not used in the selection process. And on page 16, this report states that one of the seven project assessment charts (ROI) not used to score projects though may be used as a guide was used to make project decisions. We do not agree that only some criteria are available in the Strategic Plan. While not always defined as “criteria,” all factors considered in the evaluation are articulated in Appendix D. The added project plan instruction information contained in seven additional evaluation charts, that were not used specifically as evaluation criteria, were provided to project submitters as guidance for improving the quality of the content in the narrative portions of the project plan. The fact that ROI is addressed in one of the charts does not single out that chart as a separate criterion used to evaluate the projects – ROI is clearly addressed as a criterion elsewhere in Appendix D. The indices found in Attachment 2 of Appendix D are used in the DEA model to evaluate the relative affordability of each project, where each index represents the value of a key affordability variable. While not expressly defined as “criteria,” these indices are clearly criteria from which anyone submitting a project plan can determine what is likely to improve the chances of a higher DEA ranking. The implication that service representatives at any level are not provided sufficient information to effectively compete is not consistent with the documentary and objective interactive evidence.

On page 12, this report states that the panel used a different set of criteria for the preliminary review than for the final selection process; and that for the final review, the panel used criteria found in the Strategic Plan but not explicitly identified as the specific criteria used to evaluate projects. It also states that the project selection panel is an ad hoc group according to a panel member. On page 13, this report states that the panel used criteria for go no-go not made available to the submitters of the project proposals. Likewise, on page 14, this report states that the panel used a different set of criteria to make preliminary go no-go decision. None of these statements are true. Criteria are the same for both preliminary and final reviews and all criteria are available to stakeholders and project submitters as described in the previous paragraph. The preliminary review is designed to reveal fatal flaws in a project, many of which can be corrected. The final review includes closer scrutiny of a project proposal. This two-step process is designed for efficiency. The evaluation team is not an ad hoc working group. Members were selected based on their functional positions within DOD and knowledge and insight in major acquisition, technology, or logistics areas, and are permanently assigned until they

transfer to other positions or retire. Their combined experience, expertise and judgment are the key to effective, high quality evaluation results.

Page 13 of this report states that the panel reviewed projects that were within the anticipated funding level to ensure a balance between the number of facilities and weapons projects identified for funding. Equal numbers of facilities and weapon projects are *never* an objective – that is evident throughout the history of project selection. We look at the project selection to see if there is reasonable balance between equipment and facilities. We do not equalize them. The simple fact is that the distribution has historically been approximately equal year to year, so no real discussion about it being out of balance has ever been needed. We have never established a balancing policy, because it has not been necessary. If things got out of balance, then we would deal with it through internal discussions and dialog with the corrosion executives and other stakeholders.

Page 15 reports that corrosion executives said they were unfamiliar with the criteria used by project selection panel. The corrosion executives were briefed specifically on this process more than once. This included a full afternoon of briefings during the DOD Corrosion Conference in August 2009, and the subject is always covered in the Spring Corrosion Forum. Page 17 states that the process did not consider military department priorities. That is not an accurate statement. True, the process is designed to select the best projects regardless of military department or area of application – the objective is to choose those projects that can best leverage significant reductions in the cost and impact of corrosion on warfighting systems and infrastructure. While the panel does not initially rank projects using the military department priorities, the priorities have been used to establish final rankings when two or more projects submitted by military department are considered to be comparatively equal by the evaluators. Page 16 of the report states that the ratio of Corrosion Office funding to department funding is not cited as a reason for scoring project in Strategic Plan. This is true, but is not considered necessary to emphasize this ratio in Appendix D since the need for complementary funding is well understood by the military departments, and the use of the ratio is a variable in the DEA model, which has been explained in detail to the entire corrosion community. The data used for this ratio is a required input to the project plan, and is presented in a table that reflects the distribution of funding from the DOD and the military department.

Other errors in the report are also noted. Page 5 of this report states that approximately \$1.5 billion, or 15 percent, of these maintenance costs were estimated to be related to corrosion. But according to the most current data available, a July 2010 report from LMI titled “The Annual Cost of Corrosion for the Department of Defense Facilities and Infrastructure: 2007 – 2008 Update,” the correct figure is \$1.9 billion, or 11.7 percent (FY2008). Page 9 of this report states that The Corrosion Executive assembled a panel with members from each of the Navy’s system commands to review the synopses. But the DON project evaluation process did not require assembly of a special panel. Rather,

the CCPE utilized the existing membership of the DON Corrosion Cross-Functional Team (CFT). Pages 21 and 22 of this report states that the Product Teams are staffed by representatives from the military departments, and according to a Product Team member the chair of each Product Team is rotated among the three departments annually. The fact is that only the chair of the Facilities Working-Level Integrated Product Team (WIPT) is rotated annually. And page 26 of this report states that some continuing uncertainty about how the Corrosion Executives should fulfill their responsibilities may be limiting the positive impact that these positions could have on CPC efforts. But the DON CCPE feels that there is no uncertainty or ambiguity in the CCPE responsibilities outlined in DODI 5000.67.

**RECOMMENDATION 3:** The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology and Logistics) to develop and implement a plan to ensure that return on investment validation are completed as scheduled. This plan should be completed in coordination with the military department Corrosion Executives and include information on the time frame and source of funding required to complete the validations. (See page 27/GAO Draft Report.)

**DoD RESPONSE:** Concur. Plans are already underway to address this requirement within the Corrosion Policy and Oversight Directorate and with the military department corrosion executives.

---

# Appendix IV: GAO Contact and Staff Acknowledgments

---

## GAO Contact

Jack Edwards, (202) 512-8246 or [edwardsj@gao.gov](mailto:edwardsj@gao.gov)

---

## Staff Acknowledgments

In addition to the contact name above, the following staff members made key contributions to this report: Ann Borseth, Assistant Director; Janine Cantin; Foster Kerrison; Charles Perdue; Terry Richardson; Michael Shaughnessy; and Erik Wilkins-McKee.

---

# Related GAO Products

---

*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 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 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.

---

## GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

---

## Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site ([www.gao.gov](http://www.gao.gov)). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to [www.gao.gov](http://www.gao.gov) and select "E-mail Updates."

---

## Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, <http://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

---

## To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: [www.gao.gov/fraudnet/fraudnet.htm](http://www.gao.gov/fraudnet/fraudnet.htm)

E-mail: [fraudnet@gao.gov](mailto:fraudnet@gao.gov)

Automated answering system: (800) 424-5454 or (202) 512-7470

---

## Congressional Relations

Ralph Dawn, Managing Director, [dawnr@gao.gov](mailto:dawnr@gao.gov), (202) 512-4400  
U.S. Government Accountability Office, 441 G Street NW, Room 7125  
Washington, DC 20548

---

## Public Affairs

Chuck Young, Managing Director, [youngc1@gao.gov](mailto:youngc1@gao.gov), (202) 512-4800  
U.S. Government Accountability Office, 441 G Street NW, Room 7149  
Washington, DC 20548

