OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604016D8Z - Corrosion Prevention and Control (CPC)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	7.619	4.966	5.142	5.266	5.249	5.000
P015	Corrosion Prevention and Mitigation R&D Technologies and Projects	0.000	7.619	4.966	5.142	5.266	5.249	5.000

A. Mission Description and Budget Item Justification: (U) The purpose of this program is to develop a comprehensive capability to prevent and mitigate corrosion and its effects on Department of Defense (DoD) weapon systems and infrastructure. Corrosion severely impacts system and facility reliability, readiness and safety, and consumes a disproportionate amount of material and labor hours for repair and treatment of corrosion damaged systems and facilities. The cost of corrosion across the DoD has been estimated at between $10 billion and $20 billion each year. The impact and cost of corrosion are so pervasive that Congress enacted Public Law 107-314 Sec: 1067 [portions codified in 10 U.S.C. 2228]: Prevention and mitigation of corrosion of military infrastructure and equipment. This legislation requires that DoD develop a long-term corrosion strategy to include establishment of a coordinated R&D program with transition plans. The legislation also requires that DoD designate a responsible official or organization to oversee a corrosion prevention and mitigation program.

(U) The DepSecDef designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Official in May 2003. The DoD Corrosion Official subsequently established a Corrosion Control and Oversight office in the Defense Systems Directorate to implement the program. A major responsibility of the Corrosion Control and Oversight Office is to select high payoff research and development projects that promise to prevent or mitigate corrosion and significantly reduce the total cost of corrosion along with the adverse impact of corrosion effects on weapon system and infrastructure operational capability. This office chartered a Corrosion Prevention and Control Integrated Product Team (CPCIPT) that already has selected and funded O&M projects for FY 2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidances in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs.

(U) The Corrosion Prevention Control Integrated Product Team membership consists of both the equipment and infrastructure corrosion control experts from the Services, the Joint Staff, the Coast Guard, and NASA. The Services are given project guidelines and selection criteria. The CPC project board from DDR&E, L&MR, I&L, DS and the J-4, Joint Staff chaired by the Special Assistant, Corrosion Control and Oversight reviews the projects and makes recommendations to the DoD Corrosion Executive for final approval.

(U) As a result, the Acting USD(AT&L) issued a policy letter that states: "Basic systems design, materials and processes selection, and intrinsic corrosion-prevention strategies establish the corrosion susceptibility of Defense material. The early stages of acquisition provide our best opportunity to make effective trade-offs among the many competing design criteria. . ." The Congress and the DoD Corrosion Official have made it clear that research and development into materials and methods to prevent or mitigate corrosion should receive high priority. Since Congress has clearly established this program as one of its highest priorities, and has reiterated its expectations regarding funding levels and methods, our budget request is designed to reflect both fiscal realities of scarce dollar availability and the high importance Congress places on effectively funding the program. Studies indicate that we may realize substantial rates of return on investment of 10 to 1 on many proposed projects over the next 5 to 10 years.

(U) The Department has identified well over 30 research and development projects that need to be funded and would have an impact on reducing the effects and costs of corrosion. These projects address critical corrosion issues in both DoD infrastructure as well as warfighting systems. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs of storage tanks and other mission support facilities essential to maintain support for the warfighter. Each of the services has identified

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important projects that vastly increase operational readiness and reduce operations and maintenance costs. All services are studying corrosion inhibitors that improve reliability and life of electrical and avionics equipment. Likewise, an array of highly effective, rapid cure coatings that are easy to apply and can forestall corrosion for many years on aircraft and ships are being developed. Other vital projects being considered include sealants, wash down systems, sensors and prognostic technologies that have joint service applications and potential to prevent and mitigate corrosion and its effects over a wide range of systems. The $5.000 million budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	5.141	5.135
Current BES/President's Budget (FY 2007)	0.000	7.619	4.966
Total Adjustments	0.000	2.478	-0.169
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		2.478	
Reprogrammings			
SBIR/STTR Transfer			
Other			-0.169

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy There is an annual CPCIPT call for proposed project plans in April. Projects are submitted by the Services annually in June. The project plan format is contained in the DoD Corrosion Prevention and Mitigation Strategic Plan. Each project plan contains:

1. Problem statement: Description of the problem or situation, including background, history, issues, operational problems and support costs.
2. Impact statement: Details regarding why project is important including description of the operational and/or logistic impact if no action is taken.
3. Technical description: Definition of the corrosion prevention and control objective and description of the system affected by this project; applicable technologies and associated development; expected operations and logistics performance improvement characteristics; brief description of the user community and how it will apply to their mission; and current acquisition status.
4. Risk analysis: Description of the risk in managing/developing/prototyping/testing/qualifying/manufacturing/completing the technical effort including assumptions that could affect project development or implementation.

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5. Proposed phases: If project is complex and will be performed in phases, description of each phase objective.
6. Expected deliverables and results or outcomes: Description of products to be delivered such as type/number of hardware, technical orders/drawings, installation, training, etc.; and description of expected operations and/or logistics performance improvements.
7. Program management: Description of the overall approach and tasks to be taken to accomplish the project, including organization, coordination and acquisition approach.
8. Cost/benefit analysis: Definition of all resources necessary to accomplish project, description of resulting benefits, computation of Return-On-Investment (ROI), and documentation of mission criticality.
9. Schedule: Milestone chart showing all significant events through project completion.
10. Implementation plan: Explanation of how the project will be implemented when completed including a description of the transition approach.

The project evaluation criteria are also provided as part of the call for use by the CPCIPT in arriving at their prioritized project list. There are seven categories for evaluation:
1. Return on investment credibility: Degree to which there is evidence that the project will achieve a return on investment of greater than 10:1: 3, 2, 1 points respectively for low, medium, high risk
2. Benefits credibility: Degree to which there is evidence that the projected benefits will be achieved: 3, 2, 1 points respectively for low, medium, high risk
3. Technology maturity: Degree to which proposed technology has been developed or demonstrated and will satisfy project objectives: 3, 2, 1 points respectively for low, medium, high risk
4. Schedule confidence: Degree to which the project is likely to be completed on time: 3, 2, 1 points respectively for low, medium, high risk
5. Budget confidence: Degree to which the project is likely to be completed within the proposed budget: 3, 2, 1 points respectively for low, medium, high risk
6. Operational readiness improvement: Degree to which there is evidence that the project will improve readiness, reliability, maintainability or sustainability of the system or facility: 6, 4, 2 points respectively for low, medium, high risk
7. Management support: Degree to which management actively supports this project and has committed program resources to both manage and support this project: 6, 4, 2 points respectively for low, medium, high risk

The CPCIPT receives project plans and makes a priority ranking based on detailed analysis of each proposed initiative against the seven evaluation criteria. This priority ranking is sent to the CPCIPT lead. Upon acceptance and approval of the projects by the CPCIPT, the projects are briefed to the Corrosion Forum. Funding is distributed between the Services based on priority and the evaluation process results.

Upon selection by CPCIPT of the highest priority projects and final funding approval, MIPRs are prepared by OSD to transfer individual project funding to the appropriate funding sites. These funding sites are provided by the Services. After receiving the project funding, the Services are responsible for the funding and management of the projects. OSD retains oversight and direction of the CPC initiative through the CPCIPT. Project oversight includes the review of bi-monthly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.

The bi-monthly project report (PR) format has been defined and requires the following input:
1. statement of progress
2. outstanding issues
3. performance goals and metrics

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4. upcoming events
5. schedule status
6. current return on investment (ROI) status

These PRs are submitted to the CPCIPT office. The CPCIPT analyzes project status, progress and project statistics and informs the Service POCs of any project problems. Projects are also required to report verbally at Corrosion Forums, as appropriate.

CPC Program direction, control and oversight include the following activities to be performed by staff and support contractors:
1. Plan and schedule Corrosion Forums and oversee Corrosion Forum activities and working IPT meetings.
2. Oversee project performance including review of bi-monthly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.
3. Perform DoD cost of corrosion study.
4. Develop improved, standard DoD-wide specifications, standards and qualification processes.
5. Develop corrosion training courses.
6. Prepare and publish Corrosion Prevention and Control Planning Guidebook spirals.
7. Prepare and publish annual Reports to Congress
8. Update short-term and long-term metrics.
9. Develop corrosion control program management guide for selecting materials.
10. Develop and implement the DOD Corrosion Prevention and Mitigation Strategic Plan.
11. Develop and maintain Roadmaps of IPT activities and accomplishments.
12. Assist in the annual project plan implementation and evaluation process, including the assessment of return on investment associated with proposed projects
13. Respond to Congressional, Government Accountability Office and DoD inquiries regarding the CPC Program.
14. Perform CPC Program communication and outreach to services, agencies and other organizations.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
06						

Comment: The objective of each of the projects is the reduction in the life cycle costs of corrosion for affected systems. ROI is the primary performance metric for the projects and for the CPC initiative. The average projected ROI for these projects (based on discounted cash flow calculations) exceeds 10:1 with estimated annual direct cost avoidance of over $50 million across the FYDP. Thus, the critical performance metric for this effort is the resulting life cycle cost reduction. Gains in reliability, maintainability, supportability, and thus readiness are

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the by-products of the projects with attendant additional cost reduction benefits Cost avoidances will be measured and tracked for each project, summed to the Service level, and totaled at the OSD level.

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Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P015	Corrosion Prevention and Mitigation R&D Technologies and Projects	0.000	7.619	4.966	5.142	5.266	5.249	5.000

A. Mission Description and Project Justification: (U) The purpose of this program is to develop a comprehensive capability to prevent and mitigate corrosion and its effects on Department of Defense (DoD) weapon systems and infrastructure. Corrosion severely impacts system and facility reliability, readiness and safety, and consumes a disproportionate amount of material and labor hours for repair and treatment of corrosion damaged systems and facilities. The cost of corrosion across the DoD has been estimated at between $10 billion and $20 billion each year. The impact and cost of corrosion are so pervasive that Congress enacted Public Law 107-314 Sec: 1067 [portions codified in 10 U.S.C. 2228]: Prevention and mitigation of corrosion of military infrastructure and equipment. This legislation requires that DoD develop a long-term corrosion strategy to include establishment of a coordinated R&D program with transition plans. The legislation also requires that DoD designate a responsible official or organization to oversee a corrosion prevention and mitigation program.

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(U) The Corrosion Prevention Control Integrated Product Team membership consists of both the equipment and infrastructure corrosion control experts from the Services, the Joint Staff, the Coast Guard, and NASA. The Services are given project guidelines and selection criteria. The CPC project board from DDR&E, L&MR, I&L, DS and the J-4, Joint Staff chaired by the Special Assistant, Corrosion Control and Oversight reviews the projects and makes recommendations to the DoD Corrosion Executive for final approval.

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B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	2.045	1.210
Coatings and Corrosion Prevention Compounds			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	1.120	0.855
Diagnostics, Prognostics, Monitoring and NDI Technologies			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	0.745	0.625
Prediction, Modeling and Supporting Technologies			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	2.205	1.200
Maintenance and Cathodic Protection Technologies and Practices			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	0.745	0.580
Materials Selection Processes			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	0.759	0.496

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Corrosion Control Management Activities

C. Other Program Funding Summary: Not Applicable.

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13. Respond to Congressional, Government Accountability Office and DoD inquiries regarding the CPC Program.
14. Perform CPC Program communication and outreach to services, agencies and other organizations.

D. Performance Metrics:

The objective of each of the projects is the reduction in the life cycle costs of corrosion for affected systems. ROI is the primary performance metric for the projects and for the CPC initiative. The average projected ROI for these projects (based on discounted cash flow calculations) exceeds 10:1 with estimated annual direct cost avoidance of over $50 million across the FYDP. Thus, the critical performance metric for this effort is the resulting life cycle cost reduction. Gains in reliability, maintainability, supportability, and thus readiness are the by-products of the projects with attendant additional cost reduction benefits Cost avoidances will be measured and tracked for each project, summed to the Service level, and totaled at the OSD level.

E. Major Performers Not Applicable.