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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Office of the Secretary Of Defense **Date:** February 2019

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>
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COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	118.491	4.503	8.458	3.365	-	3.365	3.425	3.460	3.529	3.587	Continuing	Continuing
015: <i>Corrosion Protection Projects</i>	118.491	4.503	8.458	3.365	-	3.365	3.425	3.460	3.529	3.587	Continuing	Continuing

A. Mission Description and Budget Item Justification

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 is currently estimated at approximately \$19 billion per year (down from approximately \$22 billion in Fiscal Year 2007). 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. The responsibilities of the Director, Corrosion Policy and Oversight and the Military Department Corrosion Prevention and Control Executives were further delineated in DODI 5000.67 "Prevention and Mitigation of Corrosion on Military Equipment and Infrastructure" of 01 February 2010.

The Deputy Secretary of Defense designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Executive in May 2003. The DoD Corrosion Executive subsequently established a Corrosion Control and Oversight office to implement the program. Subsequently, in accordance with Section 371 of the 2008 National Defense Authorization Act, the Under Secretary of Defense (USD(AT&L)) designated a Director, Corrosion Policy and Oversight to perform the duties of the DoD Corrosion Executive with responsibilities as described in the 2008 NDAA legislation. A major responsibility of the Director, Corrosion Policy and Oversight 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 has selected and funded Operation and Maintenance projects for each Fiscal Year (FY) commencing in 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 avoidance in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs. Thus, technology development, demonstration, and transition projects have been selected and funded since FY 2006. In addition, the University Corrosion Collaboration (now the Technical Corrosion Collaboration (TCC)) was formed as collaboration between universities, Armed Forces Academies and DoD laboratories focused on corrosion technology research and development and producing individuals with corrosion expertise for the DoD corrosion control community of the future. Research areas include performance prediction, assessment of finish, surface engineering, and product support. This advanced corrosion research has been ongoing since FY 2008 and performed by teams from TCC participating organizations.

In FY 2009, the Military Departments assigned corrosion executives and began submitting reports to Congress on inserting corrosion planning into the acquisition process. The FY 2011 NDAA added a requirement for the DoD to report the amount of funds requested in the preceding year budget for each planned project or activity,

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as compared to the funding required for each project or activity. These funds provide a portion of the funds used to implement associated corrosion control projects and activities.

These projects address critical corrosion issues in both Department of Defense systems and infrastructure. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs and improve the availability and safety of weapon systems and facilities essential to maintain support for the warfighter. A total of 151 projects have been completed to date and 111 have resulted in new technology implementation. The overall return on investment as estimated by the Military Departments is 16:1.

B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	3.837	3.477	3.514	-	3.514
Current President's Budget	4.503	8.458	3.365	-	3.365
Total Adjustments	0.666	4.981	-0.149	-	-0.149
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.800	-			
• SBIR/STTR Transfer	-0.127	-			
• FFRDC	-0.007	-0.019	-	-	-
• Other Program Adjustments	-	-	-0.149	-	-0.149

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 015: *Corrosion Protection Projects*

Congressional Add: *Corrosion Prevention and Control Projects and Activities*

	FY 2018	FY 2019
	-	5.000
Congressional Add Subtotals for Project: 015	-	5.000
Congressional Add Totals for all Projects	-	5.000

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Office of the Secretary Of Defense										Date: February 2019		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604016D8Z / Department of Defense Corrosion Program				Project (Number/Name) 015 / Corrosion Protection Projects			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
015: Corrosion Protection Projects	118.491	4.503	8.458	3.365	-	3.365	3.425	3.460	3.529	3.587	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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 is currently estimated at approximately \$19 billion per year (down from approximately \$22 billion in Fiscal Year 2007). 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. The responsibilities of the Director, Corrosion Policy and Oversight and the Military Department Corrosion Prevention and Control Executives were further delineated in DODI 5000.67 "Prevention and Mitigation of Corrosion on Military Equipment and Infrastructure" of 01 February 2010.

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / Department of Defense Corrosion Program	Project (Number/Name) 015 / Corrosion Protection Projects
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as compared to the funding required for each project or activity. These funds provide a portion of the funds used to implement associated corrosion control projects and activities.

These projects address critical corrosion issues in both Department of Defense systems and infrastructure. A number of low-risk, high-payoff technologies promise to vastly improve the service life and significantly reduce the maintenance costs and improve the availability and safety of weapon systems and facilities essential to maintain support for the warfighter. A total of 151 projects have been completed to date and 111 have resulted in new technology implementation. The overall return on investment as estimated by the Military Departments is 16:1.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
<p>Title: Corrosion Prevention and Control Projects and Activities</p> <p>FY 2019 Plans: Continue to:</p> <ul style="list-style-type: none"> • Work with the Services to develop and transition mature technologies; • Refine and improve acquisition policies related to corrosion control; • Perform independent risk assessments relative to corrosion for ACAT I systems; • Complete impact of corrosion studies on all defense segments; • Integrate corrosion control into critical specifications and standards; • Partner with the Services to provide corrosion training to military and DoD civilians; • Engage in communication and outreach activities to create awareness of the impact of corrosion. <p>FY 2020 Plans: Continue to:</p> <ul style="list-style-type: none"> • Collaborate with the Services to develop and transition mature technologies and eliminate duplicative investments in technology development; • Refine and improve acquisition policies related to corrosion control; • Support independent risk assessments relative to corrosion for ACAT I systems; • Complete impact of corrosion studies on all defense segments; • Integrate corrosion control into critical specifications and standards; • Partner with the Services to provide corrosion training to military and DoD civilians; • Engage in communication and outreach activities to create awareness of the impact of corrosion and potential solutions. <p>FY 2019 to FY 2020 Increase/Decrease Statement: Level of effort is consistent between FY 2019 and FY 2020. Small changes reflect minor budget fluctuations.</p>	4.503	3.458	3.365
Accomplishments/Planned Programs Subtotals	4.503	3.458	3.365

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	FY 2018	FY 2019
Congressional Add: Corrosion Prevention and Control Projects and Activities	-	5.000
FY 2019 Plans: Increase investment in projects by \$1.5M (this is the total for the Tier 2 projects) Increase investment in TCC by \$2M (the amount Rich approved yesterday for civilian institutions) Use the remainder to do more activities related to the WIPT's.		
Congressional Adds Subtotals	-	5.000

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy

Acquisitions are accomplished in three categories including projects, research opportunities, and activities as described in the DoD Corrosion Prevention and Mitigation Strategic Plan.

Projects are funded jointly by CPO and the Military Departments and are led by subject matter experts at the Military Department laboratories. CPO issues a call for proposed project plans in April and projects are submitted in June. The project plan format is contained in the DoD Corrosion Prevention and Mitigation Strategic Plan. CPO receives project plans and convenes an evaluation panel to review proposed projects and make recommendations regarding project selection. Projects are also evaluated using Data Envelopment Analysis (DEA) to rank projects by relative efficiency. DEA factors include project performance period, ratio of OSD funding to Service funding, return-on-investment (ROI), degree to which the proposed technology addresses high-cost corrosion problems, potential benefits, joint service applicability, and probability of transition. Upon acceptance and approval of the projects, funding is distributed to the Military Departments by Military Interdepartmental Purchase Request (MIPR) based on funding priorities associated with the evaluation process results. Project execution is monitored through submission of quarterly quad charts and by conducting an annual review.

Research opportunities are funded through the Technical Corrosion Collaboration (TCC). A call for white paper proposals is issued by CPO through an existing U.S. Air Force Academy (USAFA) Broad Agency Announcement (BAA). Submissions are evaluated by a technical panel chaired by the Deputy Director, CPO. Evaluation factors include quality of proposed research, potential impact on DoD corrosion problems, level of student involvement, and proposed collaboration between the research institutions and DoD laboratories. Projects are ranked by the selection panel and funded based on merit and available funds. Research institutions receive funds for the TCC through the establishment of cooperative agreements with USAFA. Research execution is monitored through submission of quarterly quad charts and by conducting an annual review.

Activities are those work efforts associated with the Working Integrated Product Teams (WIPT) under the CPCIPT and include policy, training, specifications and standards, metrics, science and technology, facilities, and communication and outreach. WIPT Leads submit funding requirements associated with their annual tactical plan submission to CPO. The proposed activities are prioritized by CPO and funded based on merit and available funds. Activities are accomplished by both

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government and contractor personnel. Funds are transferred to government personnel through the MIPR process. Funds are transferred to contractor personnel through competitively awarded contracts including the multiple-award Blanket Purchase Agreement held by CPO. Progress on activities is reviewed tri-annually at meetings of the CPCIPT.

E. Performance Metrics

Not applicable.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Office of the Secretary Of Defense												Date: February 2019			
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0400 / 4				PE 0604016D8Z / Department of Defense Corrosion Program				015 / Corrosion Protection Projects							
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Corrosion Policy and Oversight	MIPR	Various (Army, Navy, Air Force) : Various	102.737	0.408	Jan 2018	8.458	Jan 2019	3.365	Jan 2020	-		3.365	Continuing	Continuing	Continuing
Subtotal			102.737	0.408		8.458		3.365		-		3.365	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Corrosion Policy and Oversight	MIPR	Logistics Management Institute : McLean, VA	10.545	2.814	Oct 2017	-		-		-		-	Continuing	Continuing	Continuing
Corrosion Policy and Oversight	MIPR	Decisive Analytics Corporation : Arlington, VA	5.209	1.281	Oct 2017	-		-		-		-	Continuing	Continuing	-
Subtotal			15.754	4.095		-		-		-		-	Continuing	Continuing	N/A
Project Cost Totals			118.491	4.503		8.458		3.365		-		3.365	Continuing	Continuing	N/A
Remarks															
N/A															

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Office of the Secretary Of Defense		Date: February 2019
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Corrosion Policy and Oversight</i>				
DOD 5000 Series Review	1	2017	4	2020
Integration of CPC and CPC-Related Policy	1	2017	4	2020
DAG Review	1	2017	4	2020
DOD Corrosion Prevention and Mitigation Strategic Plan	1	2017	4	2020
GAO Engagement	1	2017	4	2020
Corrosion Technology Implementation Projects Support	1	2017	4	2020
Training Gap Analysis	1	2017	4	2020
Corrosion Website Sustainment	1	2017	4	2020
Product Introduction Tool	1	2017	4	2020
Facilitate/Support Corrosion Events	1	2017	4	2020
International Corrosion Partnerships and Engagements	1	2017	4	2020
Programmatic Support	1	2017	4	2020
<i>Corrosion Technology Support</i>				
Corrosion Prevention and Control (CPC) Review	1	2017	4	2020
Guidebook and Manual Support	1	2017	4	2020
Funding Reviews	1	2017	4	2020
Weapon Systems and Infrastructure Oversight Support	1	2017	4	2020
Military Department Corrosion Program Review	1	2017	4	2020
Corrosion Technology Implementation Project Reviews	1	2017	4	2020
Corrosion Subject Matter Expertise	1	2017	4	2020