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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Office of the Secretary Of Defense **Date:** March 2024

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 <i>Department of Defense Corrosion Program</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	153.715	3.058	3.185	2.637	-	2.637	3.073	3.183	3.250	3.316	Continuing	Continuing
015: <i>Corrosion Protection Projects</i>	153.715	3.058	3.185	2.637	-	2.637	3.073	3.183	3.250	3.316	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

Public Law 107-314 in sections 2228 and 131 of title 10 United States Code (USC) established the Office of Corrosion Policy and Oversight within the Office of the Secretary of Defense. And section 2228 directed the SecDef to establish a coordinated research and development program for corrosion prevention technologies. The Congressional intent is clear, correct the design and acquisition mechanisms that facilitate poor corrosion prevention decisions that translate to unnecessary system lifecycle cost increases and reduction to readiness. The Government Accountability Office (GAO), the Congressional Budget Office and the DoD IG have conducted multiple weapon systems sustainment and availability audits and continue to find corrosion is a significant impact on availability. GAO’s Aviation Sustainment Quick Look reports consistently show that 33% of the audited aviation systems report corrosion as a factor in reduced Operational Availability rates. F-35 acquisition decisions and resulting corrosion maintenance issues serves as a current example of the continued flawed approach to weapon system corrosion prevention. Corrosion continues to be a major factor in Materiel Availability of weapon systems as well. Materiel Availability corrosion impact examples include:

- F-22 Reliability and Maintainability Maturation Program total funding requirement increased 100% (\$664 million to \$1.3 billion) to correct unplanned corrosion issues (GAO-12-447, GAO-14-425)
- The Department of the Navy is deferring shipyard corrosion repairs, allocating a 6%+ cost growth factor for future corrosion repair work. (GAO-22-105032)

These examples illustrate the continued flawed sustainment engineering approach to corrosion prevention during the operational and sustainment phase of fielded weapon systems. In addition, the Maintenance Availability Data Warehouse (MADW), maintained on ADVANA, continues to show a \$20 billion corrosion maintenance cost trend.

The DoD RDT&E corrosion program, as defined in 10 USC 2228, is the proactive mechanism to change the department’s status quo reactive approach for improving weapon system reliability and maintainability (RAM). The strategic goal of the DoD Corrosion Program is to demonstrate the ability to improve weapon system readiness through the implementation of targeted and effective material and nonmaterial solutions that reduce the corrosion impacts on RAM and affordability of DoD weapon systems and infrastructure. Historically, the program’s projects have shown an opportunity to achieve a 17:1 return-on-investment.

This PE supports the implementation of section 2228, title 10 USC and the FY 2022 National Defense Strategy’s priorities by maturing technologies that deliver high warfighting value for developing and fielded weapons systems; and Protect and Sustain the Force by driving efficiencies and cost reductions to project and sustain forces globally. The FY 2025 allocated budget to the DoD Corrosion Program represents a 0.013% investment to mitigate a \$20 billion annual cost impact.

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B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	3.166	3.185	3.215	-	3.215
Current President's Budget	3.058	3.185	2.637	-	2.637
Total Adjustments	-0.108	0.000	-0.578	-	-0.578
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.062	-			
• SBIR/STTR Transfer	-0.046	-			
• Defense-Wide Topline Adjustment	-	-	-0.578	-	-0.578

Change Summary Explanation

The FY 2024 to FY 2025 decrease represents a programmatic realignment to meet departmental leadership priorities and supports higher priority National Defense Strategies.

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Office of the Secretary Of Defense										Date: March 2024		
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 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
015: Corrosion Protection Projects	153.715	3.058	3.185	2.637	-	2.637	3.073	3.183	3.250	3.316	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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- F-22 Reliability and Maintainability Maturation Program total funding requirement increased 100% (\$664 million to \$1.3 billion) to correct unplanned corrosion issues (GAO-12-447, GAO-14-425)
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These examples illustrate the continued flawed sustainment engineering approach to corrosion prevention during the operational and sustainment phase of fielded weapon systems. In addition, the Maintenance Availability Data Warehouse (MADW), maintained on ADVANA, continues to show a \$20 billion corrosion maintenance cost trend.

The DoD RDT&E corrosion program, as defined in 10 USC 2228, is the proactive mechanism to change the department's status quo reactive approach for improving weapon system reliability and maintainability (RAM). The strategic goal of the DoD Corrosion Program is to demonstrate the ability to improve weapon system readiness through the implementation of targeted and effective material and nonmaterial solutions that reduce the corrosion impacts on RAM and affordability of DoD weapon systems and infrastructure. Historically, the program's projects have shown an opportunity to achieve a 17:1 return-on-investment.

This PE supports the implementation of section 2228, title 10 USC and the FY 2022 National Defense Strategy's priorities by maturing technologies that deliver high warfighting value for developing and fielded weapons systems; and Protect and Sustain the Force by driving efficiencies and cost reductions to project and sustain forces globally. The FY 2025 allocated budget to the DoD Corrosion Program represents a 0.013% investment to mitigate a \$20 billion annual cost impact.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2023	FY 2024	FY 2025
Title: Corrosion Prevention and Control Projects and Activities	3.058	3.185	2.637

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) 015 / <i>Corrosion Protection Projects</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<p>Description: Corrosion prevention and control projects and activities are conducted in support of the support of the strategic plan to reduce the impact of corrosion on the cost and availability of DoD equipment and facilities.</p> <ul style="list-style-type: none"> Improved Landing Gear Durability for F/A-18E/F Super Hornet evaluating the application of multiple corrosion prevention technologies to improve the landing gear system to improve readiness and reduce cost. Implementing CPC technologies on LPD-24 (USS Arlington) during April 2023-July 2024 maintenance period. Modified 5 LPD class ship work specifications incorporating 16 changes implementing the latest corrosion control technologies impacting over 60K sqft of preserved surfaces, the forward and aft composite masts, and 14 bulwark frame locations. Developed and issued an Engineering Design Memo authorizing the use of 87 new corrosion control technologies for the LPD class ships. Implemented ZnNi and TGIC Powder Coat coating system on the F/A-18 launch bar. The new protective coating system is expected to reduce the scrap rate of launch bars during overhaul which costs \$100K per bar Operational maintenance units are reporting that dem/val launch bar with the new protective coating system is lasting 2x longer than the original coating system, which is a 100% increase in component corrosion reliability. Delivered corrosion control and coatings training to field- and depot-level workforce to over 100 DoD workforce personnel to implement new CPC technologies and processes, with reduced funding. 330+ on waitlist Developed a Dashboard that identifies the top corrosion maintenance labor drivers, top corrosion material drivers, and top corrosion drivers by ship hull Supported the technical revisions to corrosion-related military specifications; Mil-Std-1568 and Mil-Std-1587 are being updated this FY to include the latest CPC process, materials, and technologies. RDT&E technical report “An Analysis of Variability in Sensitization Behavior of 5083-H131 and the Impacts on Yield Strength” published August 2023 <p>FY 2024 Plans: Execute follow-on FY 2021 RDT&E project efforts:</p>			

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) 015 / <i>Corrosion Protection Projects</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<ul style="list-style-type: none"> • Improved Landing Gear Durability for F/A-18E/F Super Hornet evaluating the application of multiple corrosion prevention technologies to improve the landing gear system to improve readiness and reduce cost. • Ship Class Topside Corrosion Control Configuration (CT3C) Implementation multiple corrosion prevention technologies to improve the improve ship operational sustainment and reduce cost <p>Execute follow-on FY 2023 RDT&E project efforts:</p> <ul style="list-style-type: none"> • Demonstrate Thermal Spray Nonskid (TSN) coating technology on DDG Class Ship to verify application on thinner decking plate ship applications. • Demonstrate an Improved Epoxy Coating to improve the hot corrosion resistance of exhaust pathways on DDG Class Ships. <p>Execute following new start FY 2024 RDT&E projects:</p> <ul style="list-style-type: none"> • Composite Sunshield for Ready Service Lockers – Demonstration • Ultra-Short Pulse Laser Surface Prep for Optimizing Adhesion and Mitigating Corrosion of Marine Connectors <p><i>FY 2025 Plans:</i></p> <p>Execute follow-on FY 2024 RDT&E project efforts:</p> <ul style="list-style-type: none"> • Composite Sunshield for Ready Service Lockers – Demonstration • Ultra-Short Pulse Laser Surface Prep for Optimizing Adhesion and Mitigating Corrosion of Marine Connectors <p>Execute new start FY 2025 RDT&E projects:</p> <ul style="list-style-type: none"> • Demonstrate technologies for mitigating electronics corrosion on autonomous assets. • Development of a digital engineering corrosion design tool to assess galvanic corrosion impacts and predict the corrosion lifecycle risks <p><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> FY 2025 decrease from FY 2024 will reduce the number CPC technology demonstrations and reduce program support by eliminating 3 FTEs.</p>			
Accomplishments/Planned Programs Subtotals	3.058	3.185	2.637

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

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) 015 / <i>Corrosion Protection Projects</i>

D. Acquisition Strategy
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Office of the Secretary Of Defense **Date:** March 2024

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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Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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	120.511	1.319	Oct 2023	1.629	Oct 2024	1.652	Oct 2025	-		1.652	Continuing	Continuing	-
Subtotal			120.511	1.319		1.629		1.652		-		1.652	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
Research Studies	C/FFP	Various : Various	3.544	0.100	Sep 2023	0.100	Sep 2024	0.000		-		0.000	Continuing	Continuing	-
Technical Support	MIPR	Various (Army, Navy, Air Force) : Various	0.483	0.158	Jun 2023	0.158	Jun 2024	0.158	Jun 2025	-		0.158	Continuing	Continuing	-
Technical Support	Option/FFP	Leidos, Inc. : Virginia	0.496	-		0.000		0.000		-		0.000	Continuing	Continuing	-
Technical Support	C/FFP	Excet Inc. : Maryland	0.431	0.210	Jun 2023	0.210	Jun 2024	0.330	Jun 2025	-		0.330	Continuing	Continuing	-
Research Studies	MIPR	Various (Army, Navy, Air Force) : Various	-	0.292	Mar 2023	0.200	Oct 2024	0.113		-		0.113	Continuing	Continuing	-
Technical Engineering Services	Option/FFP	AMPP, Inc. : Houston, TX	-	-		-		0.200	Sep 2026	-		0.200	Continuing	Continuing	-
Subtotal			4.954	0.760		0.668		0.801		-		0.801	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
Critical Compatibility Testing - COVID19 (FY 2020 Congressional-Add)	MIPR	Various (Army, Navy, Air Force) : Various	2.691	-		-		-		-		-	Continuing	Continuing	-
Subtotal			2.691	-		-		-		-		-	Continuing	Continuing	N/A

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Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Corrosion Policy and Oversight	C/FFP	Logistics Management Institute : McLean, VA	24.150	0.791	Feb 2023	0.686	Feb 2024	0.000		-		0.000	Continuing	Continuing	-
Corrosion Policy and Oversight	Option/FFP	LMI : McLean, VA	1.023	-		0.000		0.000		-		0.000	Continuing	Continuing	-
SBIR/STTR Funding	Allot	OSD : Virginia	0.243	0.046	Jun 2023	0.123	Jun 2024	0.100	Jun 2025	-		0.100	Continuing	Continuing	-
USD(A&S) Management Reserve	Allot	USD(A&S) : Virginia	0.128	0.064	Jun 2023	0.064	Jun 2024	0.064	Jun 2025	-		0.064	Continuing	Continuing	-
Corrosion Policy and Oversight Mgmt Services	Allot	Corrosion Policy and Oversight : Alexandria, VA	0.015	0.015	Oct 2023	0.015	Oct 2024	0.020	Oct 2025	-		0.020	Continuing	Continuing	-
Senior Leadership Directive	Allot	OSD : Virginia	0.000	0.063	Feb 2023	0.000		0.000		-		0.000	Continuing	Continuing	-
Subtotal			25.559	0.979		0.888		0.184		-		0.184	Continuing	Continuing	N/A

	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	153.715	3.058	3.185	2.637	-	2.637	Continuing	Continuing	N/A

Remarks
N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Office of the Secretary Of Defense		Date: March 2024
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604016D8Z / <i>Department of Defense Corrosion Program</i>	Project (Number/Name) 015 / <i>Corrosion Protection Projects</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Corrosion Policy and Oversight				
Implementation of Zinc-Nickel (1Z-C17 +Zn-Ni) Electroplating as an Alternative to Cadmium (extended)	3	2016	4	2023
Gentoo™ Coating Application to HH-60G Tail Landing Gear Yoke	2	2021	4	2024
Improved Landing Gear Durability for F/A-18E/F Super Hornet	2	2021	4	2025
Ship Class Topside Corrosion Control Configuration (CT3C) Implementation	2	2021	4	2025
Aircraft structural repair using additive manufacturing	4	2018	1	2023
Analytical corrosion prediction methods	4	2018	1	2023
Mitigation of biologically induced corrosion	4	2018	1	2023
Thermal Spray Nonskid (TSN) Demonstration on DDG Class Ship (W23NV07)	4	2023	4	2025
Improved Epoxy Coatings for DDG Exhaust Pathways (W23NV06)	4	2023	4	2025
Composite Sunshield for Ready Service Lockers -- Demonstration (W23NV04)	1	2024	4	2024
Ultra-Short Pulse Laser Surface Prep for Optimizing Adhesion and Mitigating Corrosion of Marine Connectors (W23NV03)	1	2024	4	2026
Mitigating Electronics Corrosion on Autonomous Assets (W23MC02)	1	2025	4	2027
A Digital Engineering Tool to Assess Galvanic Corrosion Impacts and Risks for Lifecycle Prediction (W23AF01)	1	2025	4	2026