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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 Navy **Date:** March 2019

<b>Appropriation/Budget Activity</b> 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)					<b>R-1 Program Element (Number/Name)</b> PE 0605024N / (U)Anti-Tamper Technology Support							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	0.500	3.900	5.618	4.882	-	4.882	7.974	7.843	7.436	7.583	Continuing	Continuing
2801: Anti-Tamper	0.000	0.000	1.379	1.404	-	1.404	1.433	1.463	1.492	1.522	Continuing	Continuing
3414: Anti-Tamper Technology Support	0.500	3.900	4.239	3.478	-	3.478	6.541	6.380	5.944	6.061	Continuing	Continuing

## **Note**

The funding increase from FY 2018 to FY 2019 reflects the realignment of Project 2801 Anti-Tamper into the current Program Element (PE) from Management, Technical & Intl Supt. PE 0605853N.

## **A. Mission Description and Budget Item Justification**

Develops new and novel Anti-Tamper technologies for all Department of Navy weapon and combat systems. The technologies to be developed will be new countermeasures to prevent reverse engineering of critical U.S. military systems. The technologies include secure processing, sensors, architecture components, and enabling technologies.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	3.410	5.618	6.252	-	6.252
Current President's Budget	3.900	5.618	4.882	-	4.882
Total Adjustments	0.490	0.000	-1.370	-	-1.370
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.500	0.000			
• SBIR/STTR Transfer	-0.010	0.000			
• Program Adjustments	0.000	0.000	-1.372	-	-1.372
• Rate/Misc Adjustments	0.000	0.000	0.002	-	0.002

## **Change Summary Explanation**

The FY 2020 funding request was reduced by \$0.780 million to account for the availability of prior year execution balances.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy		Date: March 2019
<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605024N / (U) <i>Anti-Tamper Technology Support</i>	
<div> <div>Schedule: Not Applicable</div> <div>Technical: Not Applicable</div> </div>		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605024N / (U)Anti-Tamper Technology Support				Project (Number/Name) 2801 / Anti-Tamper			
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
2801: Anti-Tamper	0.000	0.000	1.379	1.404	-	1.404	1.433	1.463	1.492	1.522	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Note The funding increase from FY 2018 to FY 2019 reflects the realignment of Project 2801 Anti-Tamper into the current Program Element (PE) from Management, Technical & Intl Supt. PE 0605853N.												
A. Mission Description and Budget Item Justification Anti-Tamper Program - Perform as the Navy Technical Process Owner for the Anti-Tamper (AT) systems engineering activity that is intended to prevent and/or delay the exploitation of critical technologies in U.S. Systems. Manage the research, design, development, implementation, and testing of AT measures. Coordinate with Department of Defense AT Executive Agent and implement Department of Navy AT policy in conjunction with the Deputy Assistant Secretary Navy. Manage Security and Information Security requirements commensurate with the requirements of ALL Navy Programs throughout their lifecycles.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Anti Tamper Support  Articles:  FY 2019 Plans: Continue championing new technology with a focused and disciplined approach of development, assessment, evaluation, and transition to meet Navy program AT requirements. Maintain role in Anti-Tamper policy development for implementation and execution by the SYSCOMs incorporating Navy program AT requirements. Provide secure facilities, networks, computers, video/telephone conference and support personnel for collateral and Special Program operational environments to enable Anti-Tamper (AT) implementation and execution by SYSCOM's programs, incorporating AT requirements.  FY 2020 Base Plans: Continue championing new technology with a focused and disciplined approach of development, assessment, evaluation, and transition to meet Navy program AT requirements. Maintain role in Anti-Tamper policy development for implementation and execution by the SYSCOMs incorporating Navy program AT requirements. Provide secure facilities, networks, computers, video/telephone conference and support personnel for collateral and Special Program operational environments to enable Anti-Tamper implementation and execution by SYSCOM's programs, incorporating AT requirements.  FY 2020 OCO Plans:								0.000	1.379	1.404	0.000	1.404
								-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy				<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 1319 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0605024N / (U)Anti-Tamper Technology Support		<b>Project (Number/Name)</b> 2801 / Anti-Tamper		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>						
		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
N/A						
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> There is no significant change from FY 2019 to FY 2020.						
<b>Accomplishments/Planned Programs Subtotals</b>		0.000	1.379	1.404	0.000	1.404
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>Remarks</b>						
<b>D. Acquisition Strategy</b> The program will fund project to provide secure facilities, networks, computers, video/telephone conference and support personnel for collateral and Special Program operational environments						
<b>E. Performance Metrics</b> Manage the research, design, development, implementation and testing of Anti-Tamper measures for the Department of the Navy. Manage Information Security for all navy programs throughout their lifecycles.						

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy												Date: March 2019			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0605024N / (U)Anti-Tamper Technology Support				Project (Number/Name) 2801 / Anti-Tamper					
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
Product Development	WR	NAWCWD : China Lake, CA	0.000	0.000		1.079	Dec 2018	1.095	Oct 2019	-		1.095	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		1.079		1.095		-		1.095	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
Program Management Support	WR	NAWCWD : China Lake, CA	0.000	0.000		0.300	Nov 2018	0.309	Oct 2019	-		0.309	Continuing	Continuing	Continuing
Subtotal			0.000	0.000		0.300		0.309		-		0.309	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		1.379		1.404		-		1.404	Continuing	Continuing	N/A
Remarks															

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PE 0605024N: (U)Anti-Tamper Technology Support  
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PE 0605024N / (U)Anti-Tamper Technology Support

2801 / Anti-Tamper

Proj 2801	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Anti Tamper																																
Product Development																																
					Anti Tamper Technology Development of Weapon Systems																											
					Anti Tamper Technology Development of Combat Systems																											
2020DON - 0605024N - 2801																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / (U)Anti-Tamper Technology Support	Project (Number/Name) 2801 / Anti-Tamper

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2801				
Product Development: Anti Tamper Technology Development of Weapon Systems	1	2019	4	2024
Product Development: Anti Tamper Technology Development of Combat Systems	1	2019	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605024N / (U)Anti-Tamper Technology Support				Project (Number/Name) 3414 / Anti-Tamper Technology Support			
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
3414: Anti-Tamper Technology Support	0.500	3.900	4.239	3.478	-	3.478	6.541	6.380	5.944	6.061	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**Note**

The FY 2020 funding request was reduced by \$.780 million to account for the availability of prior year execution balances.

**A. Mission Description and Budget Item Justification**

This project develops new and novel Anti-Tamper technologies for all Department of Navy weapon and combat systems. The technologies to be developed will be new countermeasures to prevent reverse engineering of critical U.S. military systems. The technologies include secure processing, sensors, architecture components, and enabling technologies. Low technology readiness level projects will be tested for maturation and implemented to protect US technologies. Government laboratory expertise will mature in Anti Tamper technologies and techniques. Integration of various techniques will enhance the strength of the protection scheme which limits the opportunities to exploit our technological advantage on the battlefield.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<b>Title:</b> Anti Tamper Technology Development	3.900	4.239	3.478	0.000	3.478
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> This project develops new and novel Anti-Tamper technologies for all Department of Navy weapon and combat systems. The technologies to be developed will be new countermeasures to prevent reverse engineering of critical U.S. military systems. The technologies include secure processing, sensors, secure architecture components, and enabling technologies.					
<b>FY 2019 Plans:</b> Continue development of new and novel technologies that will become reverse engineering countermeasures for Department of the Navy (DoN) weapon and combat systems. The project will include awarding technology development contracts and securing engineering support from DoN engineering facilities. Test and perform technical evaluations of low technical readiness level projects for implementation to protect US technologies.					
<b>FY 2020 Base Plans:</b> Continue development of new and novel technologies that will become reverse engineering countermeasures for Department of the Navy weapon and combat systems. The project will include awarding technology					



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy			<b>Date:</b> March 2019			
<b>Appropriation/Budget Activity</b> 1319 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0605024N / (U)Anti-Tamper Technology Support		<b>Project (Number/Name)</b> 3414 / Anti-Tamper Technology Support		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>						
		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
development contracts and securing engineering support from DoN engineering facilities. Test and perform technical evaluations of low technical readiness level projects for implementation to protect US technologies.						
<b>FY 2020 OCO Plans:</b> N/A						
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> The decrease between FY 2019 and FY 2020 due to the availability of prior year execution balances.						
<b>Accomplishments/Planned Programs Subtotals</b>		3.900	4.239	3.478	0.000	3.478
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>Remarks</b>						
<b>D. Acquisition Strategy</b> This is a non-ACAT program. The strategy will be to issue technology development contracts and use Department of Navy (DoN)labs for technology development, along with using DoN engineering organizations for engineering support.						
<b>E. Performance Metrics</b> The project will fund between 4 and 8 technology development projects that will be focused on bringing anti-tamper technologies that transition to the DoN programs. The project will have a greater than 67% transition rate.						

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy												Date: March 2019			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0605024N / (U)Anti-Tamper Technology Support				Project (Number/Name) 3414 / Anti-Tamper Technology Support					
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
Primary Hardware Dev	WR	NAWCWD : China Lake, CA	0.500	2.490	Nov 2017	2.955	Nov 2018	1.739	Oct 2019	-		1.739	Continuing	Continuing	Continuing
Subtotal			0.500	2.490		2.955		1.739		-		1.739	Continuing	Continuing	N/A
Test and Evaluation (\$ 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
Test and Evaluation	WR	NAWCWD : China Lake, CA	0.000	1.410	Nov 2017	1.284	Nov 2018	1.739	Oct 2019	-		1.739	Continuing	Continuing	Continuing
Subtotal			0.000	1.410		1.284		1.739		-		1.739	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.500	3.900		4.239		3.478		-		3.478	Continuing	Continuing	N/A
Remarks															

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PE 0605024N: (U)Anti-Tamper Technology Support  
Navy

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<b>R-1 Program Element (Number/Name)</b> PE 0605024N I (U) <i>Anti-Tamper Technology Support</i>
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3414 / Anti-Tamper Technology Support

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / (U)Anti-Tamper Technology Support	Project (Number/Name) 3414 / Anti-Tamper Technology Support

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3414</b>				
Product Development: Anti Tamper Technology Development of Weapon Systems	1	2018	4	2024
Product Development: Anti Tamper Technology Development of Combat Systems	1	2018	4	2024
Test and Development: Technical Evaluation of Anti-Tamper Weapons Systems	1	2018	4	2024
Test and Development: Technical Evaluation of Anti-Tamper Combat Systems	1	2018	4	2024