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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	4.400	6.049	4.882	7.810	-	7.810	9.372	9.049	9.086	9.409	Continuing	Continuing
2801: <i>Anti-Tamper</i>	0.000	1.326	1.404	1.470	-	1.470	1.485	1.514	1.546	1.577	Continuing	Continuing
3414: <i>Anti-Tamper Technology Support</i>	4.400	4.723	3.478	6.340	-	6.340	7.887	7.535	7.540	7.832	Continuing	Continuing

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. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	5.618	4.882	7.974	-	7.974
Current President's Budget	6.049	4.882	7.810	-	7.810
Total Adjustments	0.431	0.000	-0.164	-	-0.164
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.500	0.000			
• SBIR/STTR Transfer	-0.069	0.000			
• Program Adjustments	0.000	0.000	-0.224	-	-0.224
• Rate/Misc Adjustments	0.000	0.000	0.060	-	0.060

Change Summary Explanation

The FY 2021 funding request was reduced by \$0.883M to account for the availability of prior year execution balances.

Project Unit 3414: Increase of \$2.862M from FY 2020 to FY 2021 will fully fund technology development tasks, extensively evaluate technology prototypes and demonstrate units in labs.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>				Project (Number/Name) 2801 / <i>Anti-Tamper</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2801: <i>Anti-Tamper</i>	0.000	1.326	1.404	1.470	-	1.470	1.485	1.514	1.546	1.577	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Anti Tamper Support	1.326	1.404	1.470	0.000	1.470
Articles:	-	-	-	-	-
FY 2020 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 2021 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 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 2801 / <i>Anti-Tamper</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Increase of \$0.066 between FY 2020 and FY 2021 will be used to meet Anti-Tamper support demands.					
Accomplishments/Planned Programs Subtotals	1.326	1.404	1.470	0.000	1.470

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

N/A

Remarks

D. Acquisition Strategy

The program will fund project to provide secure facilities, networks, computers, video/telephone conference and support personnel for collateral and Special Program operational environments

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0605024N / Anti-Tamper Technology Support				2801 / Anti-Tamper							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	1.079	Dec 2018	1.095	Oct 2019	1.129	Oct 2020	-		1.129	Continuing	Continuing	Continuing
Subtotal			0.000	1.079		1.095		1.129		-		1.129	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	0.247	Nov 2018	0.309	Oct 2019	0.341	Oct 2020	-		0.341	Continuing	Continuing	Continuing
Subtotal			0.000	0.247		0.309		0.341		-		0.341	Continuing	Continuing	N/A
Project Cost Totals			0.000	1.326		1.404		1.470		-		1.470	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 2801 / <i>Anti-Tamper</i>
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
Proj 2801																												
<i>Anti Tamper</i>																												
Product Development																												
<i>Anti Tamper Technology Development Plan</i>																												
Intelligence Analysis																												
<i>Anti Tamper Technology Development Intelligence Analysis</i>																												
Anti Tamper Steering Group	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 2801 / <i>Anti-Tamper</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2801				
Product Development: Anti Tamper Technology Development Plan	1	2019	4	2025
Intelligence Analysis: Anti Tamper Technology Intelligence Analysis	1	2019	4	2025
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2019	1	2019	1	2019
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2019	3	2019	3	2019
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2020	1	2020	1	2020
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2020	3	2020	3	2020
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2021	1	2021	1	2021
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2021	3	2021	3	2021
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2022	1	2022	1	2022
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2022	3	2022	3	2022
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2023	1	2023	1	2023
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2023	3	2023	3	2023
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2024	1	2024	1	2024
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2024	3	2024	3	2024
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 1-2025	1	2025	1	2025
Anti Tamper Steering Group: Anti Tamper Technology Steering Group 3-2025	3	2025	3	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>				Project (Number/Name) 3414 / <i>Anti-Tamper Technology Support</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3414: <i>Anti-Tamper Technology Support</i>	4.400	4.723	3.478	6.340	-	6.340	7.887	7.535	7.540	7.832	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Anti Tamper Technology Development	4.723	3.478	6.340	0.000	6.340
Articles:	-	-	-	-	-
Description: 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.					
FY 2020 Plans: 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 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.					
FY 2021 Base Plans: 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.					

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 3414 / <i>Anti-Tamper Technology Support</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Extensively evaluate the technology prototypes and demonstration units in the labs, which will provide increased technical information and feedback to the technology developers. FY 2021 OCO Plans: N/A FY 2020 to FY 2021 Increase/Decrease Statement: Increase of \$2.862M from FY 2020 to FY 2021 will support the evaluation of developed prototypes and focus efforts on COTS protection, volume protection of microelectronics, extension of trust from secure to unsecure devices, cryptographic volume protection, and third party intellectual property solutions.					
Accomplishments/Planned Programs Subtotals	4.723	3.478	6.340	0.000	6.340

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

Remarks

D. Acquisition Strategy

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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 3414 / <i>Anti-Tamper Technology Support</i>
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Primary Hardware Dev	WR	NAWCWD : China Lake, CA	2.990	3.455	Nov 2018	2.400	Oct 2019	4.372	Oct 2020	-		4.372	Continuing	Continuing	Continuing
Subtotal			2.990	3.455		2.400		4.372		-		4.372	Continuing	Continuing	N/A

Remarks
Increase from FY 2020 to FY 2021 will be used to extensively evaluate the technology prototypes and provide increased technical information and feedback to the technology developers.

Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Test and Evaluation	WR	NAWCWD : China Lake, CA	1.410	1.268	Nov 2018	1.078	Oct 2019	1.968	Oct 2020	-		1.968	Continuing	Continuing	Continuing
Subtotal			1.410	1.268		1.078		1.968		-		1.968	Continuing	Continuing	N/A

Remarks
Increase from FY 2020 to FY 2021 will be used to extensively evaluate the technology prototypes and provide increased technical information and feedback to the technology developers.

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	4.400	4.723	3.478	6.340	-	6.340	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 3414 / <i>Anti-Tamper Technology Support</i>
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Proj 3414	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	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 Support																																
Contract Awards		▲				▲				▲				▲				▲				▲				▲				▲		
Technology Development	<div style="border: 1px solid black; padding: 5px; text-align: center;">Anti Tamper Technology Development</div>																															
Lab Support	<div style="border: 1px solid black; padding: 5px; text-align: center;">Anti Tamper Technology Lab Support</div>																															
Gap Analysis	▲				▲				▲				▲				▲				▲				▲				▲			

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605024N / <i>Anti-Tamper Technology Support</i>	Project (Number/Name) 3414 / <i>Anti-Tamper Technology Support</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3414				
Contract Awards: Anti Tamper Technology Contract Award 2019	2	2019	2	2019
Contract Awards: Anti Tamper Technology Contract Award 2020	2	2020	2	2020
Contract Awards: Anti Tamper Technology Contract Award 2021	2	2021	2	2021
Contract Awards: Anti Tamper Technology Contract Award 2022	2	2022	2	2022
Contract Awards: Anti Tamper Technology Contract Award 2023	2	2023	2	2023
Contract Awards: Anti Tamper Technology Contract Award 2024	2	2024	2	2024
Contract Awards: Anti Tamper Technology Contract Award 2025	2	2025	2	2025
Technology Development: Anti Tamper Technology Development	2	2019	4	2025
Lab Support: Anti Tamper Technology Lab Support	1	2019	1	2025
Gap Analysis: Anti Tamper Technology Gap Analysis 2019	1	2019	1	2019
Gap Analysis: Anti Tamper Technology Gap Analysis 2020	1	2020	1	2020
Gap Analysis: Anti Tamper Technology Gap Analysis 2021	1	2021	1	2021
Gap Analysis: Anti Tamper Technology Gap Analysis 2022	1	2022	1	2022
Gap Analysis: Anti Tamper Technology Gap Analysis 2023	1	2023	1	2023
Gap Analysis: Anti Tamper Technology Gap Analysis 2024	1	2024	1	2024
Gap Analysis: Anti Tamper Technology Gap Analysis 2025	1	2025	1	2025