Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 7: *Operational Systems Development*					**R-1 Program Element (Number/Name)** PE 0204574N *I Cryptologic Direct Support*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	21.669	1.122	2.355	4.544	-	4.544	4.514	4.630	4.685	4.836	Continuing	Continuing
3091: *Advanced Cryptological Sys Eng (CCOP)*	21.669	1.122	2.355	4.544	-	4.544	4.514	4.630	4.685	4.836	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Cryptologic Systems Engineering - The Cryptologic Carry-on Program (CCOP) develops state-of-the-art signal acquisition systems and software in response to Combatant Command requirements for a quick-reaction surface cryptologic carry-on capability. There are 124 cryptologic capable surface ships and shore sites in the current Navy inventory; each of these is a potential user of this carry-on equipment, depending on deployment schedules and the tempo of operations. In addition, numerous other Navy and Coast Guard platforms are potential users.

B. Program Change Summary ($ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	1.122	1.155	2.328	-	2.328
Current President's Budget	1.122	2.355	4.544	-	4.544
Total Adjustments	0.000	1.200	2.216	-	2.216
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	0.000	1.200	2.261	-	2.261
• Rate/Misc Adjustments	0.000	0.000	-0.045	-	-0.045

Change Summary Explanation

The FY 2019 funding request was reduced by ($0.185) million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

Technical: The increase in funding is a result of identified Fleet priority need for continued development into the Red Falcon capability to support evolving target sets, entry into the tactical kill-chain via sensor to shipboard combat systems interface and national data management, and distribution to support Navy Distributed Signals Intelligence Operations, Joint operations with the U.S. Army and afloat.

Schedule: Not applicable.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy					Date: February 2018	

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0204574N / Cryptologic Direct Support	Project (Number/Name) 3091 / Advanced Cryptological Sys Eng (CCOP)

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
3091: Advanced Cryptological Sys Eng (CCOP)	21.669	1.122	2.355	4.544	-	4.544	4.514	4.630	4.685	4.836	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Cryptologic Systems Engineering - Cryptologic Carry On Program (CCOP) develops state-of-the-art signal acquisition systems and software in response to Combatant Command requirements for a quick-reaction surface, subsurface and airborne cryptologic carry-on capability. There are approximately 124 cryptologic capable surface ships and shore sites in the current Navy inventory; each is a potential user of this carry-on equipment, depending on deployment schedules and the tempo of operations. In addition, there are numerous subsurface and air platforms that are also potential users. This funding line will provide the resources to enable rapid transition of available Commercial Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) technologies that apply to Fleet requirements for carry-on system functionalities. These technologies typically require various levels of integration to leverage on-board systems that provide system and mission management, product reporting, and data analysis. COTS / GOTS system documentation and training materials usually require adaptation or modification to meet fleet operator requirements, or entirely new training materials may need to be developed. Before deployment for operational use, systems must be systematically tested to ensure suitable and reliable operation, tested for network vulnerabilities if connected to shipboard Local Area Networks, and tested relative to interoperability requirements. Certification testing is conducted to meet Office of Naval Intelligence security requirements, and network testing is conducted in accordance with Information Technology (IT) requirements to allow connection to Navy networks. Funding will also provide resources to address rapid deployment of enhancements or improvements to the common hardware and/or software baseline of all other carry-on subsystems to meet emergent requirements.

Funding will support development and integration efforts to fuse data produced and distributed by Shipboard IW / Information Operations (IO) systems with other intelligence data at multiple classification levels and provided to shipboard combat systems to support kinetic (bombs, mortars, missiles, bullets) and non-kinetic fires (electronic attack, lasers, cyber-attack) and can also be used to enable a more complete understanding and more agile and effective exploitation of the electromagnetic spectrum.

Increase in FY19 funding to begin development of next generation Red Falcon capabilities including system upgrades to address additional targets and evolving modes of target deployment including non-traditional platforms and create advanced forward training modules. FY19 funds will continue to integrate, test, and document identified COTS and GOTS technologies and subsystems that meet emergent and on-going Fleet requirements as specified in the Signals of Interest (SOI) and target threat list, as well as, continue to develop upgrades to existing systems and subsystems according to Fleet requirements. Funds aid the development of new signal processing algorithms and software based solutions to enable rapid transition of capability to permanently installed Ship's Signal Exploitation Space (SSES) systems, including Ship's Signals Exploitation Equipment (SSEE) Family of Systems (FoS) and its variants, the research of self-contained small form factor systems for Patrol craft and other small units, and the research of Adaptive Mission Modules for rapid insertion to counter specific threats or provide intelligence in specific areas of operation. Funds also support the Navy's Counter-Unmanned Aircraft Systems (C-UAS) efforts per Joint Rapid Acquisition Council (JRAC) approved Joint Urgent Operational Need (JUON) CC-0558 and is intended to provide additional Red Falcon / Cryptologic Carry-on Program (CCOP) systems for platforms deploying to United States Central Command area of responsibility. More details are available at higher classification.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 *I* 7	**R-1 Program Element (Number/Name)** PE 0204574N *I Cryptologic Direct Support*	**Project (Number/Name)** 3091 *I Advanced Cryptological Sys Eng (CCOP)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Advanced Cryptological Sys Eng - CCOP	1.122	2.355	4.544	0.000	4.544
Articles:	-	-	-	-	-

FY 2018 Plans:
Continue to integrate, test and document identified Commercial Off-The-Shelf (COTS) and Government
Off -The-Shelf (GOTS) technologies and subsystems that meet emergent and on-going Fleet requirements
as specified in the Signals of Interest (SOI) and target threat list. Continue to develop upgrades to existing
systems and subsystems according to Fleet requirements. Continue the development of new signal processing
algorithms and software based solutions to enable rapid transition to permanently installed Ship's Signal
Exploitation Space (SSES) systems and the research of self-contained small form factor systems for Patrol Craft
and other small units.   Continue to develop enhanced Red Falcon systems to combat future SOI. Continue
to research Adaptive Mission Modules for specific threats / areas for rapid insertion into permanently installed
systems.

OCO:
FY18 Other Contingency Operations (OCO) funds to develop target signal files in order to counter the latest
threats; new threat signal files must be developed and fielded to forward deployed platforms. Funds support
the Navy's Counter-Unmanned Aircraft Systems (C-UAS) efforts per Joint Rapid Acquisition Council (JRAC)
approved Joint Urgent Operational Need (JUON) CC-0558 and is intended to provide additional Red Falcon /
Cryptologic Carry-on Program (CCOP) systems for platforms deploying to United States Central Command area
of responsibility. More details are available at higher classification.

FY 2019 Base Plans:
Continue to integrate, test, and document identified COTS and GOTS technologies and subsystems that meet
emergent and on-going Fleet requirements as specified in the SOI and target threat list, as well as, continue
to develop upgrades to existing systems and subsystems according to Fleet requirements. Funds aid the
development of new signal processing algorithms and software based solutions to enable rapid transition of
capability to permanently installed SSES systems, including SSEE Family of Systems (FoS) and its variants, the
research of self-contained small form factor systems for Patrol craft and other small units, and the research of
Adaptive Mission Modules for rapid insertion to counter specific threats or provide intelligence in specific areas of

Exhibit R-2A, **RDT&E Project Justification:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 *I* 7	**R-1 Program Element (Number/Name)** PE 0204574N *I Cryptologic Direct Support*	**Project (Number/Name)** 3091 *I Advanced Cryptological Sys Eng (CCOP)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
operation. FY19 funds will also initiate engineering and software development of the next generation Red Falcon capabilities using common data formatting and hardware backplane standards. *FY 2019 OCO Plans:* N/A *FY 2018 to FY 2019 Increase/Decrease Statement:* Increase from FY18 to FY19 addresses the requirement for enhanced interoperability with host systems and scalable deployment including non-traditional platforms, evolving target sets, and ability to create advanced forward training modules of the next generation Red Falcon capabilities. This enhancement will use the industry standard VITA 49/VPX for data formatting (Command & Control) and backplane hardware. Incorporating this engineering change allows for a seamless integration for future Pre-Planned Product Improvement (P3I) capability development efforts.					
Accomplishments/Planned Programs Subtotals	1.122	2.355	4.544	0.000	4.544

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• OPN / 3501: *Cryptologic Communications Equipment*	22.282	14.435	11.337	2.000	13.337	9.584	10.062	11.185	11.466	0.000	155.465

Remarks

D. Acquisition Strategy

Acquisition, management, and contracting strategies support engineering and manufacturing development by providing funds to Space and Naval Warfare (SPAWAR) Systems Centers Atlantic and Pacific, and miscellaneous contractors with management oversight by SPAWAR.

E. Performance Metrics

Cryptologic Carry On Program (CCOP) delivers state-of-the-art signal acquisition software for CCOP systems in response to Combatant Command requirements for a quick-reaction surface, subsurface and airborne cryptologic carry-on capability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy														Date: February 2018
Appropriation/Budget Activity 1319 / 7							**R-1 Program Element (Number/Name)** PE 0204574N / Cryptologic Direct Support						**Project (Number/Name)** 3091 / Advanced Cryptological Sys Eng (CCOP)	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development	Various	Various : Various	6.109	0.000		0.000		0.000		-		0.000	0.000	6.109	-
Software Development	C/CPFF	Classified Contract : Classified Contract	5.484	0.676	Jan 2017	1.480	Jan 2018	2.856	Jan 2019	-		2.856	Continuing	Continuing	Continuing
Software Development	WR	SSC PAC : San Diego, CA	2.248	0.067	Nov 2016	0.290	Nov 2017	0.560	Nov 2018	-		0.560	Continuing	Continuing	Continuing
Software Development	WR	SSC LANT : Charleston, SC	1.614	0.150	Nov 2016	0.150	Nov 2017	0.289	Nov 2018	-		0.289	Continuing	Continuing	Continuing
		Subtotal	15.455	0.893		1.920		3.705		-		3.705	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering	Various	Various : Various	1.915	0.000		0.000		0.000		-		0.000	0.000	1.915	-
Systems Engineering	C/CPFF	Classified Contract : Classified Contract	1.458	0.133	Dec 2016	0.230	Jan 2018	0.444	Jan 2019	-		0.444	Continuing	Continuing	Continuing
		Subtotal	3.373	0.133		0.230		0.444		-		0.444	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
				Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	C/CPFF	Classified Contract : Classified Contract	0.513	0.000		0.000		0.000		-		0.000	0.000	0.513	-
Developmental Test & Evaluation	WR	NPGS : Monterey, CA	0.226	0.023	Apr 2017	0.000		0.000		-		0.000	0.000	0.249	-
Developmental Test & Evaluation	WR	OPTEVFOR : Norfolk, VA	0.206	0.023	Apr 2017	0.000		0.000		-		0.000	0.000	0.229	-
Developmental Test & Evaluation	WR	SSC LANT : Charleston, SC	0.000	0.000		0.095	Nov 2017	0.183	Nov 2018	-		0.183	Continuing	Continuing	Continuing
		Subtotal	0.945	0.046		0.095		0.183		-		0.183	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy			**Date:** February 2018

Appropriation/Budget Activity 1319 I 7	R-1 Program Element (Number/Name) PE 0204574N I *Cryptologic Direct Support*	Project (Number/Name) 3091 I *Advanced Cryptological Sys Eng (CCOP)*

Management Services ($ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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**
Management Services Prior Years	Various	Various : Various	1.273	0.000		0.000		0.000		-		0.000	0.000	1.273	-
Program Management Support	WR	SSC PAC : San Diego, CA	0.623	0.050	Nov 2016	0.110	Nov 2017	0.212	Nov 2018	-		0.212	Continuing	Continuing	Continuing
		Subtotal	1.896	0.050		0.110		0.212		-		0.212	Continuing	Continuing	N/A

	Prior Years	**FY 2017**		**FY 2018**		**FY 2019 Base**		**FY 2019 OCO**		**FY 2019 Total**	**Cost To Complete**	**Total Cost**	**Target Value of Contract**
Project Cost Totals	21.669	1.122		2.355		4.544		-		4.544	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0204574N / *Cryptologic Direct Support*	**Project (Number/Name)** 3091 / *Advanced Cryptological Sys Eng (CCOP)*

Exhibit R-4, RDT&E Program Schedule Profile DATE: June 2017

Appropriation/Budget Activity	Program Element Name and Number	Project Name and Number
RDT&E, N / BA 7	0204574N Cryptologic Direct Support	Advanced Cryptologic Systems Engineering (CCOP) / 3091

Program Schedule Profile chart showing Fiscal Years 2017 through 2023 (each divided into quarters 1–4) with rows for:
- Prototype Phase
- System Development (SDR milestones)
- Software Delivery
- T&E Milestones / Operational Assessment (OA milestones)

Exhibit R-4, Program Schedule Profile

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Navy		**Date:** February 2018
Appropriation/Budget Activity 1319 *I* 7	**R-1 Program Element (Number/Name)** PE 0204574N *I Cryptologic Direct Support*	**Project (Number/Name)** 3091 *I Advanced Cryptological Sys Eng (CCOP)*

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3091				
Prototype Phase - 2017	1	2017	4	2017
Prototype Phase - 2018	1	2018	4	2018
Prototype Phase - 2019	1	2019	4	2019
Prototype Phase - 2020	1	2020	4	2020
Prototype Phase - 2021	1	2021	4	2021
Prototype Phase - 2022	1	2022	4	2022
Prototype Phase -2023	1	2023	4	2023
System Design Review (SDR) - 2017	2	2017	2	2017
System Design Review (SDR) - 2018	2	2018	2	2018
System Design Review (SDR) - 2019	2	2019	2	2019
System Design Review (SDR) - 2020	2	2020	2	2020
System Design Review (SDR) - 2021	2	2021	2	2021
System Design Review (SDR) - 2022	2	2022	2	2022
System Design Review (SDR) - 2023	2	2023	2	2023
Software Delivery - 2017	3	2017	4	2017
Software Delivery - 2018	3	2018	4	2018
Software Delivery - 2019	3	2019	4	2019
Software Delivery - 2020	3	2020	4	2020
Software Delivery - 2021	3	2021	4	2021
Software Delivery - 2022	3	2022	4	2022
Software Delivery - 2023	3	2023	4	2023

Exhibit R-4A, **RDT&E Schedule Details:** PB 2019 Navy			**Date:** February 2018	
Appropriation/Budget Activity 1319 *I* 7	**R-1 Program Element (Number/Name)** PE 0204574N *I Cryptologic Direct Support*		**Project (Number/Name)** 3091 *I Advanced Cryptological Sys Eng (CCOP)*	

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Operational Assessment (OA) - 2017	4	2017	4	2017
Operational Assessment (OA) - 2018	4	2018	4	2018
Operational Assessment (OA) - 2019	4	2019	4	2019
Operational Assessment (OA) - 2020	4	2020	4	2020
Operational Assessment (OA) - 2021	4	2021	4	2021
Operational Assessment (OA) - 2022	4	2022	4	2022
Operational Assessment (OA) - 2023	4	2023	4	2023