

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0206335M I (U)Common Aviation Command and Control Sys (CAC2S)							
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	52.461	6.976	4.760	4.489	-	4.489	4.346	4.435	4.530	4.620	Continuing	Continuing
3373: Common Aviation Command and Control System (CAC2S)	52.461	6.976	4.760	4.489	-	4.489	4.346	4.435	4.530	4.620	Continuing	Continuing
Program MDAP/MAIS Code: Project MDAP/MAIS Code(s): MN36												
A. Mission Description and Budget Item Justification												
Common Aviation Command and Control System (CAC2S) - A coordinated modernization effort to replace the existing aviation command and control equipment of the Marine Air Command and Control System (MACCS) and to provide the Aviation Combat Element (ACE) with the necessary hardware, software, equipment, and facilities to effectively command, control, and coordinate aviation operations. The CAC2S system will accomplish the MACCS missions with a suite of operationally scalable modules to support the Marine Air Ground Task Force (MAGTF), Joint, and Coalition Forces. The CAC2S integrates the functions of aviation command and control into an interoperable system that will support the core competencies of all Marine Corps warfighting concepts. The CAC2S, in conjunction with the MACCS organic sensors (AN/TPS-63, AN/TPS-59, and AN/TPS-80 (Ground/Air Task Oriented Radar (G/ATOR)) and weapon system Composite Tracking Network (CTN) will provide enhanced air control, improved situational awareness, sensor integration (G/ATOR and AN/TPS-59), full Tactical Data Link integration, airspace and battle planning and command functionality as well as sensor netting integration (CTN). CAC2S, with these organic MACCS programs, support the tenets of Expeditionary Maneuver Warfare and fosters joint interoperability. CAC2S Increment I will replace legacy aviation command and control systems in the following Marine aviation agencies: Direct Air Support Center (DASC), Tactical Air Command Center (TACC), and Tactical Air Operations Center (TAOC).												
B. Program Change Summary (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total				
Previous President's Budget				7.343	4.826	4.506	-	4.506				
Current President's Budget				6.976	4.760	4.489	-	4.489				
Total Adjustments				-0.367	-0.066	-0.017	-	-0.017				
• Congressional General Reductions				-	-0.066							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-0.124	0.000							
• SBIR/STTR Transfer				-0.243	0.000							
• Rate/Misc Adjustments				0.000	0.000	-0.017	-	-0.017				

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PE 0206335M: (U)Common Aviation Command and Control S...  
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Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy										Date: March 2019		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)				Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)			
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
3373: Common Aviation Command and Control System (CAC2S)	52.461	6.976	4.760	4.489	-	4.489	4.346	4.435	4.530	4.620	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: MN36												
Note Prior year funding is listed in PE 0206313M Marine Corps Comms Systems, Project 2273 Air Operations Command & Control (C2) Systems.												
A. Mission Description and Budget Item Justification Common Aviation Command and Control System (CAC2S) - A coordinated modernization effort to replace the existing aviation command and control equipment of the Marine Air Command and Control System (MACCS) and to provide the Aviation Combat Element (ACE) with the necessary hardware, software, equipment, and facilities to effectively command, control, and coordinate aviation operations. The CAC2S system will accomplish the MACCS missions with a suite of operationally scalable modules to support the Marine Air Ground Task Force (MAGTF), Joint, and Coalition Forces. The CAC2S integrates the functions of aviation command and control into an interoperable system that will support the core competencies of all Marine Corps warfighting concepts. The CAC2S, in conjunction with the MACCS organic sensors (AN/TPS-63, AN/TPS-59, and AN/TPS-80 (Ground/Air Task Oriented Radar (G/ATOR)) and weapon system Composite Tracking Network (CTN) will provide enhanced air control, improved situational awareness, sensor integration (G/ATOR and AN/TPS-59), full Tactical Data Link integration, airspace and battle planning and command functionality as well as sensor netting integration (CTN). CAC2S, with these organic MACCS programs, support the tenets of Expeditionary Maneuver Warfare and fosters joint interoperability. CAC2S Increment I will replace legacy aviation command and control systems in the following Marine aviation agencies: Direct Air Support Center (DASC), Tactical Air Command Center (TACC), and Tactical Air Operations Center (TAOC). Funding decrease of \$0.271M from FY 2019 to FY 2020 due to the completion of CAC2S FOT&E.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Product Development  Articles:  FY 2019 Plans: N/A  FY 2020 Base Plans: N/A  FY 2020 OCO Plans:								1.063	0.000	0.000	0.000	0.000
								-	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019			
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
N/A						
<b>Title:</b> Support and Management Services		1.851	1.033	1.008	0.000	1.008
<b>Articles:</b>		-	-	-	-	-
<b>FY 2019 Plans:</b> - Continue yearly Cyber Compliance Tests required with each of the CAC2S quarterly software releases and conduct the Annual Security Review testing to support the maintenance of the CAC2S Authority to Operate (ATO). - Continue MITRE support during G/ATOR DT-1E, IOT&E, and CAC2S Phase 2 FOT&E test events.						
<b>FY 2020 Base Plans:</b> - Continue to conduct yearly Cyber Compliance Tests required with each of the CAC2S quarterly software releases and conduct the Annual Security Review testing to support the maintenance of the CAC2S Authority To Operate (ATO)/ Authority To Connect (ATC) reaccreditation.						
<b>FY 2020 OCO Plans:</b> N/A						
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Decrease of \$0.025M from FY 2019 to FY 2020 is due to reduction of scope of activity support due to completion of FY 2019 test events.						
<b>Title:</b> Test and Evaluation		4.062	3.727	3.481	0.000	3.481
<b>Articles:</b>		-	-	-	-	-
<b>FY 2019 Plans:</b> - Continue interface test support during G/ATOR DT-1E and IOT&E as well as CAC2S Phase 2 FOT&E to validate G/ATOR interface. - Initiate integration and test of AN/MRQ-13 Communication Subsystem (CS) hardware procured for tech refresh to ensure operational readiness and compatibility with system baseline prior to fielding.						
<b>FY 2020 Base Plans:</b> - Continue required integration and interface testing of upgraded hardware components and software enhancements to support ATO/ATC reaccreditation. - Initiate testing to support system software capability enhancements (Multi Source Correlator Tracker (MSCT), virtual Air Defense Systems Integrator (vADSI), Flexible Analysis and Mission Effectiveness System (FLAMES),						

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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 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)		<b>Project (Number/Name)</b> 3373 / Common Aviation Command and Control System (CAC2S)	

<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>
<p>FLAMES Automated Simulation Trainer (FAST)) in improve capability and maintain system Authority To Operate (ATO)/ Authority To Connect (ATC) reaccreditation by Q2 FY 2021.</p> <p><b>FY 2020 OCO Plans:</b> N/A</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Decrease of \$0.246M from FY 2019 to FY 2020 is due to reduction of scope of activity support due to completion of interface support provided during G/ATOR FY 2019 test events and CAC2S FOT&amp;E.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	6.976	4.760	4.489	0.000	4.489

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</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>
• PMC/4644: Common Aviation Command And Control System (CAC2S)	48.295	32.587	37.203	-	37.203	33.051	3.970	4.065	4.261	0.000	244.803

<b>Remarks</b>
<p>RDT&amp;E prior to FY15 is listed in PE 0206313M Marine Corps Comms Systems, Project 2273 Air Operations Command &amp; Control (C2) Systems.</p> <p>PMC funding for FY15 and beyond is listed in BLI 4644 Common Aviation Command and Control System (CAC2S). Prior to FY15 PMC funding is listed in BLI 4640 Air Operations C2 Systems, Common Aviation Command and Control Systems (CAC2S).</p>

<b>D. Acquisition Strategy</b>
<p>CAC2S will employ an evolutionary acquisition strategy utilizing an incremental and phased approach for development and fielding of the CAC2S. The Capability Production Document (CPD) identifies two increments to achieve the full requirements of CAC2S. The current acquisition strategy addresses Increment I of the CAC2S development process and focuses on the requirements that will modernize the assault and air support, air defense and control, and Aviation Combat Element (ACE) battle management capabilities of the Marine Air Command and Control System (MACCS). Increment I of the CAC2S will be accomplished through a two phased approach. Phase 1 addressed the requirements to establish the baseline CAC2S capabilities for the MACCS and improved Air Command and Control (AC2) performance and effectiveness. Phase 2 will address the requirements for remaining ACE Battle Management Command &amp; Control (BMC2) requirements. Quantity nine (9) Phase 2 Limited Deployment Unit systems were procured in FY15 and FY16 and fielded in FY17. Full Deployment Unit (FDU) production contract awarded 24 August 2017 and will provide a total of forty one (41) systems to be fielded over three years (FY 2018-FY 2020). Approved Acquisition Objective is 50 systems.</p>

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy		Date: March 2019
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	<b>Project (Number/Name)</b> 3373 / Common Aviation Command and Control System (CAC2S)
<b>E. Performance Metrics</b> Integrated Master Schedule OSD Financial Benchmarks Technical Performance Measures Probability of Program Success (PoPS) Assessments		

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2020 Navy</b>												<b>Date: March 2019</b>			
<b>Appropriation/Budget Activity</b> 1319 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)						<b>Project (Number/Name)</b> 3373 / Common Aviation Command and Control System (CAC2S)			
<b>Product Development (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Hardware Development	WR	NSWC CD : Crane, IN	2.042	0.264	Nov 2017	0.000		0.000		-		0.000	0.896	3.202	-
Engineering Manufacturing and Development	C/FPIF	General Dynamics : Pheonix, AZ	3.800	0.000		0.000		0.000		-		0.000	16.544	20.344	59.922
Software Development	WR	NSWC DD : Dahlgren, VA	2.905	0.799	Nov 2017	0.000		0.000		-		0.000	0.000	3.704	-
Hardware and Software Engineering	C/CPIF	NSWC CD : Crane, IN	1.197	0.000		0.000		0.000		-		0.000	0.000	1.197	-
<b>Subtotal</b>			9.944	1.063		0.000		0.000		-		0.000	17.440	28.447	N/A
<b>Support (\$ 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>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Travel	Various	Travel : TBD	0.215	0.050	Oct 2017	0.039	Oct 2018	0.045	Oct 2019	-		0.045	Continuing	Continuing	Continuing
Engineering Support	WR	NSWC DD : Dahlgren, VA	1.563	0.908	Nov 2017	0.233	Nov 2018	0.292	Nov 2019	-		0.292	0.000	2.996	-
Acquisition Support	WR	NSWC CD : Crane, IN	0.199	0.372	Nov 2017	0.241	Nov 2018	0.311	Nov 2019	-		0.311	0.000	1.123	-
Software Support	C/FFP	Raytheon Solipsys : Fulton, MD	0.000	0.000		0.000		0.180	Aug 2020	-		0.180	0.000	0.180	-
Software Support	C/FFP	Ternion : Huntsville, AL	0.000	0.000		0.000		0.180	May 2020	-		0.180	0.000	0.180	-
Prior Years Cumulative Funding	Various	Various : Various	4.121	0.000		0.000		0.000		-		0.000	0.000	4.121	-
<b>Subtotal</b>			6.098	1.330		0.513		1.008		-		1.008	Continuing	Continuing	N/A
<b>Remarks</b> \$0.495M increase From FY 2019 to FY 2020 is due to increase in support for CAC2S SW enhancements (Multi Source Correlator Tracker (MSCT), virtual Air Defense Systems Integrator (vADSI), Flexible Analysis and Mission Effectiveness System (FLAMES), FLAMES Automated Simulation Trainer (FAST)) associated with Authority To Operate (ATO)/ Authority To Connect (ATC) reaccreditation.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy												Date: March 2019			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)				Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)					
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
Testing and Evaluation	WR	NSWC - Port Huenueme : Port Huenueme, CA	2.309	0.623	Nov 2017	0.442	Nov 2018	0.000		-		0.000	0.955	4.329	-
Testing and Evaluation	Sub Allot	MCOTEA : Quantico, VA	3.038	0.000		0.000		0.000		-		0.000	3.465	6.503	-
Testing and Evaluation	Sub Allot	MCTSSA : Camp Pendleton, CA	7.254	0.250	Nov 2017	0.118	Nov 2018	0.000		-		0.000	0.952	8.574	-
Testing and Evaluation	WR	NSWC CD : Crane, IN	7.403	0.907	Nov 2017	0.878	Nov 2018	2.528	Nov 2019	-		2.528	7.445	19.161	-
Testing and Evaluation	WR	NSWC DD : Dahlgren, VA	2.486	2.282	Nov 2017	2.289	Nov 2018	0.435	Nov 2019	-		0.435	0.000	7.492	-
Testing and Evaluation	WR	NSWC Corona : Corona, CA	0.000	0.000		0.000		0.518	Nov 2019	-		0.518	0.000	0.518	-
Prior Years Cumulative Funding	Various	Various : Various	8.624	0.000		0.000		0.000		-		0.000	0.000	8.624	-
Subtotal			31.114	4.062		3.727		3.481		-		3.481	12.817	55.201	N/A
Remarks															
NSWC Crane \$1.650M increase from FY 2019 to FY 2020 is due to integration and interface testing upgraded HW components and SW enhancements for ATO/ATC reaccreditation. NSWC Dahlgren is reduced by -\$1.854M from FY 2019 to FY 2020 due to reduction in scope of required T&E support.															
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
Prior Years Cumulative Funding	Various	Various : Various	2.732	0.000		0.000		0.000		-		0.000	0.000	2.732	19,096.227
Sensor Management	C/FFP	MITRE : Bedford, MA	2.573	0.521	Oct 2017	0.520	Oct 2018	0.000		-		0.000	2.958	6.572	-
Subtotal			5.305	0.521		0.520		0.000		-		0.000	2.958	9.304	N/A
Remarks															
-\$0.520M decrease from FY 2019 to FY 2020 is due to not requiring MITRE support in FY 2020.															



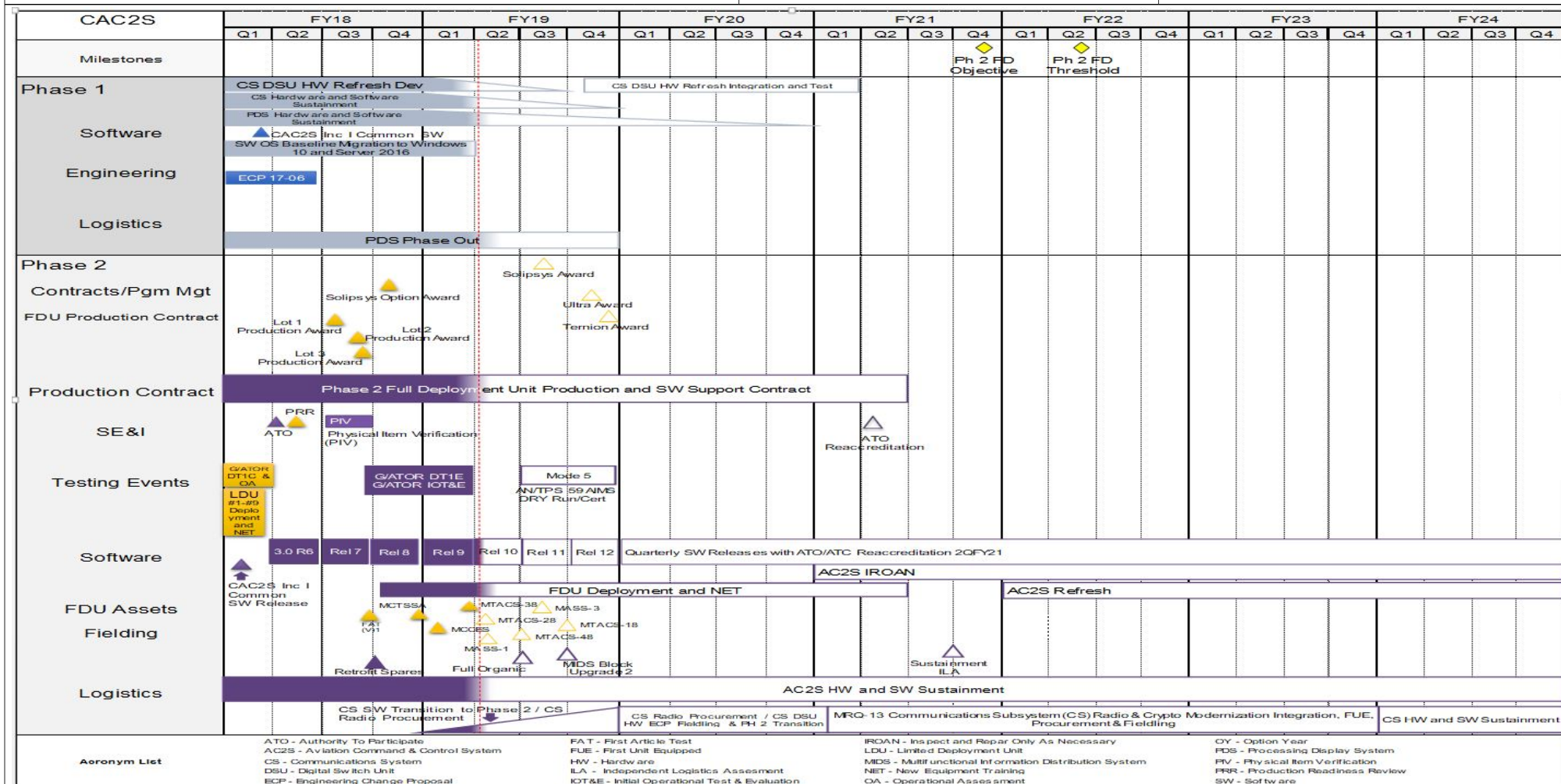
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy										Date: March 2019					
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)					Project (Number/Name) 3373 / Common Aviation Command and Control System (CAC2S)					
			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			52.461	6.976		4.760		4.489		-		4.489	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&amp;E Schedule Profile: PB 2020 Navy

Date: March 2019

Appropriation/Budget Activity  
1319 / 7R-1 Program Element (Number/Name)  
PE 0206335M / (U)Common Aviation  
Command and Control Sys (CAC2S)Project (Number/Name)  
3373 / Common Aviation Command and  
Control System (CAC2S)

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Navy			<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0206335M / (U)Common Aviation Command and Control Sys (CAC2S)	<b>Project (Number/Name)</b> 3373 / Common Aviation Command and Control System (CAC2S)	

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b>Proj 3373</b>				
CAC2S RDT&E IMS: Communication Subsystem (CS) Hardware Integration and Test	4	2019	1	2021
CAC2S RDT&E IMS: CAC2S Phase 2 FOT&E	3	2018	1	2019
CAC2S RDT&E IMS: G/ATOR Initial Operational Test & Evaluation	3	2018	1	2019
CAC2S RDT&E IMS: G/ATOR Developmental Test - 1E	3	2018	1	2019
CAC2S RDT&E IMS: SW Enhancements for ATO/ATC reaccreditation	1	2020	2	2021
CAC2S RDT&E IMS: Quarterly SW release 13 - 16	1	2020	4	2020