

UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Navy **Date:** March 2019

Appropriation / Budget Activity / Budget Sub Activity: 1109N: Procurement, Marine Corps / BA 04: Communications and Electronics Equipment / BSA 4: Command and Control Systems	P-1 Line Item Number / Title: 4644 / Common Aviation Command and Control System (CAC2S)
---	---

ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0206313M, 0206335M
--	---	---

Line Item MDAP/MAIS Code: N36

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity (<i>Units in Each</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost (<i>\$ in Millions</i>)	81.371	48.295	32.587	37.203	0.000	37.203	33.051	3.970	4.065	4.261	-	244.803
Less PY Advance Procurement (<i>\$ in Millions</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) (<i>\$ in Millions</i>)	81.371	48.295	32.587	37.203	0.000	37.203	33.051	3.970	4.065	4.261	-	244.803
Plus CY Advance Procurement (<i>\$ in Millions</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Total Obligation Authority (<i>\$ in Millions</i>)	81.371	48.295	32.587	37.203	0.000	37.203	33.051	3.970	4.065	4.261	-	244.803

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares (<i>\$ in Millions</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Flyaway Unit Cost (<i>\$ in Dollars</i>)	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost (<i>\$ in Dollars</i>)	-	-	-	-	-	-	-	-	-	-	-	-

Description:

The Common Aviation Command and Control System (CAC2S) is a modernization effort to replace the legacy aviation command and control equipment within the Marine Air Command and Control System (MACCS). CAC2S provides the Aviation Combat Element with the necessary hardware, software, equipment and facilities to effectively command, control, coordinate and integrate aviation operations within the Marine Air-Ground Task Force and Joint and Coalition Forces. CAC2S integrates air surveillance information from MACCS organic radars (AN/TPS-59 and AN/TPS-80 G/ATOR) and is interoperable with Composite Tracking Network (CTN) to enable coordinated air battle management and fires with the Navy's Cooperative Engagement Capability (CEC). CAC2S interfaces ground command and control systems to enable greater integration of air-ground operations across the MAGTF. CAC2S Increment I replaces 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). Future CAC2S increments incorporating Marine Air Traffic Control, Ground Based Air Defense, Unmanned Aerial Systems (UAS), airborne and shipboard variants and capabilities are anticipated.

UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Navy **Date:** March 2019

Appropriation / Budget Activity / Budget Sub Activity:
1109N: Procurement, Marine Corps / BA 04: Communications and Electronics
Equipment / BSA 4: Command and Control Systems

P-1 Line Item Number / Title:
4644 / Common Aviation Command and Control System (CAC2S)

ID Code (A=Service Ready, B=Not Service Ready): A **Program Elements for Code B Items:** N/A **Other Related Program Elements:** 0206313M, 0206335M

Line Item MDAP/MAIS Code: N36

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/MAIS Code	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)
P-5	1 / Common Aviation Command and Control System (CAC2S)	P-5a			- / 81.371	- / 48.295	- / 32.587	- / 37.203	- / 0.000	- / 37.203
P-40	Total Gross/Weapon System Cost				- / 81.371	- / 48.295	- / 32.587	- / 37.203	- / 0.000	- / 37.203

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:

FY 2018 Base Appropriation (\$48.295M):

Funded continuation of the CAC2S full-rate-production (FRP) contract procuring Lots 2 and 3 of the AN/TSQ-297 Full Deployment Units (FDUs). Twenty-one (21) FRP/FDU systems were procured to buy out the remaining quantity of systems needed to attain the CAC2S Approved Acquisition Objective (AAO) of 50 systems.

CAC2S Lot 3 FDU procurement was executed 1 year ahead of schedule. Funds to accelerate production were sourced through a Should Cost initiative that reduced government furnished equipment (GFE) and reallocated the funding to accelerate CAC2S Lot 3 production from FY 2019 to FY 2018. Following award of the FRP contract, Headquarters Marine Corps, Combat Development & Integration (CD&I) approved removal of legacy Tactical Data Link (TDL-A/B) requirements from the CAC2S Capability Production Document. It was determined that CAC2S implementation of modern, prevalent TDL's (TDL-J, JREAP & CEC) provides the capabilities required to operate in joint / coalition environments and that the legacy TDL-A/B offered limited utility. Removal of TDL-A/B requirements and associated GFE components enabled reallocation of funds to support procurement of Lot 3 in FY 2018 - a year ahead of schedule.

In addition, the FY 2018 budget supported all activities required for CAC2S procurement and fielding which included procurement of remaining GFE, production / fielding support and new equipment training. GFE primarily consists of components that contain controlled, cryptographic items such as the Army-Navy/Portable Radio Communication 117G (AN/PRC-117G) and Miniature Precision Lightweight GPS Receiver (PLGR) Engine - Selective (GPS MPE-S).

FY 2019 Base Appropriation (\$32.587M):

Funds procure tactical voice/data radios associated with the CAC2S MRQ-13 Communications Subsystem (CS) refresh/upgrade. The CS was originally fielded in FY 2006 and has been sustained and repurposed to provide CAC2S operators access to tactical radios required to communicate with aircraft and external agencies. The CS is a High Mobility Multipurpose Wheeled Vehicle (HMMWV) mounted shelter containing voice over internet protocol (VoIP) networking/intercom components and tactical radios that enables remote communications access and control from laptop computers within the CAC2S operations facility/tent. The seventy-seven (77) CS vehicles associated with CAC2S currently retain 2006 era radios. These obsolete radios must be replaced to meet NSA crypto modernization mandates and enable CAC2S to maintain voice/data interoperability with joint forces. FY 2019 funds made available through the FY 2018 Should Cost initiative allows accelerated procurement of tactical radios for the CS refresh/upgrade to occur beginning 1 year ahead of schedule. Accelerated procurement of the tactical radios increases CS interoperability, reliability and sustainability and enable CAC2S to meet NSA crypto modernization mandates as the legacy/obsolete CS radios and networking components are replaced with modern, readily supportable communications equipment.

The FY 2019 budget also supports the procurement of the Multi-function Information Distribution System (MIDS) Block II upgrade required to comply with DoD frequency remapping and NSA crypto modernization mandates by FY 2020.

FY 2020 Base Appropriation (\$37.203M):

UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Navy		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 1109N: Procurement, Marine Corps / BA 04: Communications and Electronics Equipment / BSA 4: Command and Control Systems		P-1 Line Item Number / Title: 4644 / Common Aviation Command and Control System (CAC2S)
ID Code (A=Service Ready, B=Not Service Ready): A	Program Elements for Code B Items: N/A	Other Related Program Elements: 0206313M, 0206335M
Line Item MDAP/MAIS Code: N36		
<p>Funds will continue the procurement of radios and voice networking/intercom components associated with the AN/MRQ-13 Communications System (CS) refresh/upgrade. Replaces obsolete voice/data communications components with modernized equipment that is more reliable, readily supportable and cyber-secure, enabling integration with CAC2S voice/data networks and interoperability with joint forces.</p> <p>Funding continues to support CAC2S FDU fielding and associated, on-site new equipment training that is provided with CAC2S deliveries to the operating forces. Supports installation of engineering changes that require integration upon initial delivery of the production systems.</p> <p>The \$4.616M increase from FY 2019 to FY 2020 supports continued procurement of voice communications components required to refresh/upgrade the seventy-seven (77) CS vehicles.</p>		

UNCLASSIFIED

Exhibit P-5, Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 1109N / 04 / 4	P-1 Line Item Number / Title: 4644 / Common Aviation Command and Control System (CAC2S)	Item Number / Title [DODIC]: 1 / Common Aviation Command and Control System (CAC2S)

ID Code (A=Service Ready, B=Not Service Ready) :	MDAP/MAIS Code:
---	------------------------

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	81.371	48.295	32.587	37.203	0.000	37.203
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	81.371	48.295	32.587	37.203	0.000	37.203
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Total Obligation Authority (\$ in Millions)	81.371	48.295	32.587	37.203	0.000	37.203

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares (\$ in Millions)	-	-	-	-	-	-
Gross/Weapon System Unit Cost (\$ in Dollars)	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)
Flyaway Cost																		
Recurring Cost																		
1.1.1) Limited Deployment Unit (LDU) ^(†)	2,422K	8	19.377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.1.2) LDU (Reserve) ^(†)	2,158K	1	2.158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.1.3) Full Deployment Unit (FDU) AN/TSQ-297(V)1 Variant ^(†) (1)	1,622K	10	16.215	1,640K	21	34.449	-	-	-	-	-	-	-	-	-	-	-	-
1.1.4) Full Deployment Unit (FDU) AN/TSQ-297(V)2 Variant ^(†) (2)	2,725K	3	8.175	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.1.5) Full Deployment Unit (FDU) AN/TSQ-297(V)3 Variant ^(†) (3)	1,530K	7	10.707	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.1.6) ECP Production	-	-	3.417	-	-	0.966	-	-	1.671	-	-	-	-	-	-	-	-	-
Subtotal: Recurring Cost	-	-	60.049	-	-	35.415	-	-	1.671	-	-	-	-	-	-	-	-	-
Non Recurring Cost																		
1.2.1) LDU Refurbishment	-	-	1.127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit P-5, Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 1109N / 04 / 4		P-1 Line Item Number / Title: 4644 / Common Aviation Command and Control System (CAC2S)
ID Code (A=Service Ready, B=Not Service Ready) :		MDAP/MAIS Code:

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$)	Qty (Each)	Total Cost (\$ M)
1.2.2) AN/MRQ-13 Communications Subsystem Upgrade (4)	-	-	-	-	-	-	-	-	18.816	-	-	31.597	-	-	-	-	-	31.597
<i>Subtotal: Non Recurring Cost</i>	-	-	1.127	-	-	-	-	-	18.816	-	-	31.597	-	-	-	-	-	31.597
<i>Subtotal: Flyaway Cost</i>	-	-	61.176	-	-	35.415	-	-	20.487	-	-	31.597	-	-	-	-	-	31.597
Hardware Cost																		
Recurring Cost																		
2.1.1) Army-Navy/ Portable Radio Communication 117G (AN/PRC 117G)	-	-	0.441	-	-	0.363	-	-	0.218	-	-	-	-	-	-	-	-	-
2.1.2) GPS - MPE-S (See ACRN defined in P5 Remarks) (5)	-	-	0.013	-	-	0.012	-	-	0.009	-	-	-	-	-	-	-	-	-
2.1.3) MIDS Block II Crypto Modernization (6)	-	-	-	-	-	-	-	-	0.811	-	-	-	-	-	-	-	-	-
<i>Subtotal: Recurring Cost</i>	-	-	0.454	-	-	0.375	-	-	1.038	-	-	-	-	-	-	-	-	-
<i>Subtotal: Hardware Cost</i>	-	-	0.454	-	-	0.375	-	-	1.038	-	-	-	-	-	-	-	-	-
Support Cost																		
3.1) Production Support	-	-	4.882	-	-	1.171	-	-	1.580	-	-	-	-	-	-	-	-	-
3.2) Engineering/Fielding Support (7)	-	-	3.564	-	-	3.850	-	-	3.965	-	-	2.798	-	-	-	-	-	2.798
3.3) Common Software Baseline	-	-	5.833	-	-	2.478	-	-	-	-	-	-	-	-	-	-	-	-
3.4) Program Acquisition Support	-	-	1.040	-	-	1.239	-	-	1.680	-	-	-	-	-	-	-	-	-
3.5) New Equipment Training (NET) (8)	-	-	4.422	-	-	3.767	-	-	3.837	-	-	2.808	-	-	-	-	-	2.808
<i>Subtotal: Support Cost</i>	-	-	19.741	-	-	12.505	-	-	11.062	-	-	5.606	-	-	-	-	-	5.606
Gross/Weapon System Cost	-	-	81.371	-	-	48.295	-	-	32.587	-	-	37.203	-	-	0.000	-	-	37.203

(t) indicates the presence of a P-5a

Footnotes:

UNCLASSIFIED

Exhibit P-5, Cost Analysis: PB 2020 Navy		Date: March 2019
Appropriation / Budget Activity / Budget Sub Activity: 1109N / 04 / 4	P-1 Line Item Number / Title: 4644 / Common Aviation Command and Control System (CAC2S)	Item Number / Title [DODIC]: 1 / Common Aviation Command and Control System (CAC2S)
ID Code (A=Service Ready, B=Not Service Ready) :		MDAP/MAIS Code:
<p>(1) CAC2S Full Rate Production (FRP) contract includes procurement of three Full Deployment Unit (FDU) variants which differ in capacity and cost. The AN/TSQ-297(V)1 variant is equipped with a tent-based operations facility providing 18 operator workstations. The CAC2S (V)1 variant is fielded to Tactical Air Operations Centers (TAOC), Early Warning & Control (E/WC) detachments and Direct Air Support Centers (DASC) agencies. Following FRP contract award, Headquarters Marine Corps, Combat Development & Integration (CD&I) approved removal of legacy Tactical Data Link (TDL-A/B) requirements from the CAC2S Capability Production Document. Removal of TDL-A/B requirements and associated GFE components from the FRP contract / systems enabled reallocation of funds to support procurement all CAC2S V1 variants with FY2017 and FY2018 appropriated funds.</p> <p>(2) CAC2S Full Rate Production (FRP) contract includes procurement of three Full Deployment Unit (FDU) variants which differ in capacity and cost. The AN/TSQ-297(V)2 variant is equipped with a tent-based operations facility providing 176 operator workstations - which accounts for the higher unit cost compared to the (V)1 and (V)3 variants. The CAC2S (V)2 variant is fielded to each Marine Aircraft Wing's Tactical Air Command Center (TACC).</p> <p>(3) CAC2S Full Rate Production (FRP) contract includes procurement of three Full Deployment Unit (FDU) variants which differ in capacity and cost. The AN/TSQ-297(V)3 variant is operationally the same as the (V)1 variant, but is not equipped with tactical vehicles and tents, which accounts for the lower unit cost. The CAC2S (V)3 variant is fielded to the supporting establishment and Military Occupational Specialty producing schools.</p> <p>(4) Funds procure tactical radios, voice networking/intercom components required for the AN/MRQ-13 Communications System (CS) refresh/upgrade. The CS upgrade replaces 2006 era, obsolete voice/data communications components with modernized equipment that is more reliable, readily supportable and cyber-secure, enabling integration with CAC2S networks and interoperability with joint forces. FY 2019 funds made available through a FY 2018 Should Cost initiative allows accelerated procurement of components for the CS refresh/upgrade to occur beginning 1 year ahead of schedule. Accelerated procurement of the refresh/upgrade components improves CS interoperability, reliability and sustainability and enable CAC2S to meet NSA crypto modernization mandates as the legacy/obsolete CS radios and networking components are replaced with modern, readily supportable communications equipment. The \$12.781M increase from FY 2019 to FY 2020 supports continued procurement of voice communications components required to refresh/upgrade the seventy-seven (77) CS vehicles.</p> <p>(5) Global Positioning System - Miniature Precision Lightweight GPS Receiver (PLGR) Engine - Selective Availability Anti-spoofing Module (SAASM) (GPS - MPE-S).</p> <p>(6) FY 2019 budget increase supports procurement of the Multi-function Information Distribution System (MIDS) Block II upgrade required to comply with DoD frequency remapping and NSA crypto modernization mandates by FY 2020. MIDS radios provide the primary means to exchange Tactical Data Link (TDL-J) air battlespace information among joint and coalition aviation command and control agencies and aircraft. The MIDS circuit cards and crypto devices are over 30 years old and have reached the end of their lifecycle. The Block II upgrade was funded by Marine Air Command and Control System (MACCS) (PE: 0206313M; BLI:4640) in FY2017 and FY2018. CAC2S replaces legacy MACCS equipment that used the MIDS radios, however CAC2S will continue to procure the remaining quantity of MIDS Block II upgraded radios required to reutilize and integrate the radios within the CAC2S FDU systems.</p> <p>(7) Engineering/Fielding support provides funds required to address fact of life system failure and reliability fixes as well as engineering support required to address hardware obsolescence and refresh. -\$1.167M reduction from FY19 to FY20 is due to the transition of engineering support to operations and sustainment.</p> <p>(8) -\$1.029M reduction from FY 2019 to FY 2020 is due to reduction of required NET for AN/TSQ-297 FDUs in FY 2020.</p>		

UNCLASSIFIED

Exhibit P-5a, Procurement History and Planning: PB 2020 Navy							Date: March 2019					
Appropriation / Budget Activity / Budget Sub Activity: 1109N / 04 / 4			P-1 Line Item Number / Title: 4644 / Common Aviation Command and Control System (CAC2S)				Item Number / Title [DODIC]: 1 / Common Aviation Command and Control System (CAC2S)					

Cost Elements	O C O	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty (Each)	Unit Cost (\$)	Specs Avail Now?	Date Revision Available	RFP Issue Date
1.1.1) Limited Deployment Unit (LDU)		2016 ⁽⁹⁾	General Dynamics / Scottsdale, AZ	C / FFP	MCSC, Quantico, VA	Jun 2016	Jun 2017	4	2,158K	Y		Feb 2012
1.1.2) LDU (Reserve)		2016	General Dynamics / Scottsdale, AZ	C / FFP	MCSC, Quantico, VA	Apr 2016	Apr 2017	1	2,158K	Y		Feb 2012
1.1.3) Full Deployment Unit (FDU) AN/TSQ-297(V)1 Variant		2017	General Dynamics / Scottsdale, AZ	C / FFP	MCSC, Quantico, VA	Aug 2017	Aug 2018	10	1,622K	Y		Oct 2016
1.1.3) Full Deployment Unit (FDU) AN/TSQ-297(V)1 Variant		2018	General Dynamics / Scottsdale, AZ	C / FFP	MCSC, Quantico, MCSC, Quantico, VA	May 2018	Feb 2019	21	1,640K	Y		Oct 2016
1.1.4) Full Deployment Unit (FDU) AN/TSQ-297(V)2 Variant		2017	General Dynamics / Scottsdale, AZ	C / FFP	Quantico, VA	Aug 2017	Aug 2018	3	2,725K	Y		Oct 2016
1.1.5) Full Deployment Unit (FDU) AN/TSQ-297(V)3 Variant		2017	General Dynamics / Scottsdale, AZ	C / FFP	Quantico, VA	Aug 2017	Aug 2018	7	1,530K	Y		Oct 2016

Footnotes:

⁽⁹⁾ Total System AAO = 50 as reflected on the P5. 4 PY refurbished assets not reflected on P5a.