

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy **Date:** March 2023

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>
--	--

COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	1,654.542	257.887	254.446	220.404	-	220.404	158.304	153.686	154.848	157.975	Continuing	Continuing
3278: <i>MQ-25 Air System (AS)</i>	1,489.675	212.150	227.443	201.945	-	201.945	141.960	135.117	137.194	139.962	Continuing	Continuing
3279: <i>Unmanned Carrier Aviation Mission Control System</i>	164.867	45.737	27.003	18.459	-	18.459	16.344	18.569	17.654	18.013	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P462

Note

PE 0605414N Unmanned Carrier Aviation (UCA) is comprised of two separated programs:
 PU 3278 MQ-25 Development is directly related to the MQ-25 Air System (AS) development ACAT I Program.
 PU 3279 UMCS is directly related to the Unmanned Carrier Aviation (UCA) Mission Control System (UMCS) ACAT II program. Unmanned Carrier Aviation (UCA) Mission Control System develops the control station and integrates it with the MQ-25 Air System along with multiple networks and systems both afloat and on shore.

MQ-25 PU 3278 execution is dependent upon the success of Unmanned Carrier Aviation Mission Control System PU 3279 execution. This submission for PU 3278 has been coordinated with Unmanned Carrier Aviation Mission Control System PU 3279.

The prime contractor for MQ-25 development declared a loss on the MQ-25 contract in Oct 2018 and thereby invoked Federal Acquisition Regulation clause 32.503-6(g). Per the loss contract clause, a loss ratio factor must be applied to all progress payments to protect the government by ensuring the amount of unliquidated progress payments does not exceed the fair value of undelivered work. The reduced progress payments will prevent the program from meeting expenditure benchmarks in the near years.

Prior to FY21, PMA-268 had been developing a government-furnished Ground Control Station (GCS) known as MD-5 as part of its UMCS program, the system-of-systems required for command and control of the MQ-25A air vehicle and payload. In September 2020, Navy leadership directed the MQ-25 program to transition to an already mature, industry-developed GCS solution that supports Joint All Domain Command and Control (JADC2) interoperability and multi-level security requirements. The modified hardware will streamline software development, readily support multiple classification levels, and position the MQ-25 for interoperability with other DoD systems. With the decision to switch to an industry developed GCS, work associated with integrating the new GCS into the MQ-25 air-vehicle and payload was put on contract with Boeing (integration) in December 2020 and Lockheed Martin (via NSMA) in April 2021.

MQ-25 build and delivery of test aircraft are driving critical path to Initial Operational Capability (IOC). Due to aircraft build quality escapes, build schedule margin was significantly reduced and required the program to mitigate the delayed delivery of test aircraft by accepting limitations on the two permanent test assets and one fleet asset.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
---	-------------------------

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>
--	--

A. Mission Description and Budget Item Justification

The MQ-25 program, PU 3278, rapidly develops an unmanned capability to embark on Carrier Vessel, Nuclear (CVN) as part of the Carrier Air Wing (CVW) to conduct aerial refueling as a primary mission and provide Intelligence, Surveillance, and Reconnaissance (ISR) capability for a secondary mission. MQ-25 extends Carrier Air Wing mission effectiveness range, partially mitigates the current Carrier Strike Group (CSG) organic ISR shortfall and fills the future Carrier Air Wing-tanker gap, mitigating Strike Fighter shortfall and preserving F/A-18E/F Fatigue Life Expenditure for its primary missions. As the first carrier-based, Group 5 Unmanned Aircraft System (UAS), MQ-25 will pioneer the integration of manned and unmanned operations, utilize mature, complex sea-based Command, Control, Communications, Computers, and Intelligence (C4I) technologies, and pave the way for future multi-faceted, multi-mission Unmanned Aircraft Systems to pace emerging threats.

The MQ-25 system will enhance CVN capability and versatility for the Joint Forces Commander through the integration of a persistent, sea-based, multi-mission aerial refueling and ISR Unmanned Aircraft System into the Carrier Air Wing. MQ-25 is comprised of an Air System which will integrate with the UMCS program. These architectural segments will be managed by the PMA-268 Government Lead Systems Integrator (LSI) that provides system-of-systems integration and is also responsible for managing enterprise-level Unmanned Carrier Aviation architecture and associated interfaces. MQ-25 Development includes development and test of the air vehicle to include software, peculiar support equipment, training systems and other logistics elements.

In FY 2024, The program will continue Ground Control Station integration and begin ground and flight test with the air vehicles. All four Engineering Development Models (EDMs) and one of the three System Demonstration Test Articles (SDTAs) will deliver to the test program to support ground and flight testing. The second and third System Demonstration Test Articles and fatigue test article will complete build and be delivered in FY25 for testing. The program will continue to develop and integrate increased software capabilities into the aircraft in support of carrier suitability and mission systems evaluation

The Unmanned Carrier Aviation Mission Control System program, PU 3279, is the system-of-systems required for MQ-25 vehicle and payload control both shipboard and shore based. Unmanned Carrier Aviation Mission Control System consists of all ground and ship based hardware, software, and networks associated with the planning and execution of flight operations and tactical missions. In addition to the Ground Control Station, consisting of Air Vehicle Pilot (AVP) workstations and servers, the UMCS program builds hardware to support line of sight (LOS) communications, beyond line of sight (BLOS) satellite communications (SATCOM), and integration with ship/shore based systems. There are three Ground Control Station variants: MD-5C (CVN-based), MD-5D (Shore-based) and MD-5E (Embarkable system for use on CVNs that do not yet have permanent Ground Control Station systems installed). Unmanned Carrier Aviation Mission Control System leverages existing Programs of Record (PoR) for network integration and line of sight/beyond line of sight communications and builds MQ-25 unique systems (e.g. an ARC-210 based line of sight communication system and a Video Management System (VidMS) for Air Vehicle Pilot situational awareness). The Ground Control Station streamlines software development, supports multiple classification levels, and positions MQ-25A interoperability with other DoD systems. Hardware development and fabrication is one facet of the program. Unmanned Carrier Aviation Mission Control System develops and integrates software and modifies several aircraft carrier spaces to install and integrate the Ground Control Station and communication systems, in support of MQ-25A test events and operations aboard select NIMITZ Class CVNs. The Unmanned Carrier Aviation Mission Control System program modifies and integrates with existing, external Command, Control, Communication, Computers, and Intelligence systems to provide network paths for air vehicle and mission payload data using a variety of wideband and narrowband communication paths. Unmanned Carrier Aviation Mission Control System accomplishes this by integrating the Ground Control Station and the MQ-25A air vehicle with multiple networks and systems both at sea and on shore.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Navy	Date: March 2023
---	-------------------------

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>
--	--

In FY 2024, Unmanned Carrier Aviation Mission Control System will finalize the interface design and install the MD-5E Embarkable system. The Embarkable system consists of a subset of the final Ground Control Station configuration hardware and test unique instrumentation installed and integrated with existing ship communication and network systems. Unmanned Carrier Aviation Mission Control System will also continue Ground Control Station software development and Correction of Deficiency (CoD) builds to support MQ-25 at-sea testing events in FY25. Unmanned Carrier Aviation Mission Control System will continue developing Technical Data Packages for system level components and continue providing system engineering, program management, and development support for the program.

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

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	261.992	265.646	207.039	-	207.039
Current President's Budget	257.887	254.446	220.404	-	220.404
Total Adjustments	-4.105	-11.200	13.365	-	13.365
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-11.200			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-4.105	0.000			
• Program Adjustments	0.000	0.000	14.600	-	14.600
• Rate/Misc Adjustments	0.000	0.000	-1.235	-	-1.235

Change Summary Explanation

PU 3278 FY2024 funding request was increased by \$14.600 (less \$1.235 in rate/misc adjustments) to fund MQ-25 Satellite for Test to support Initial Operational Capability.

Schedule:

PU 3278: R-4 Schedule Acquisition Milestone Knowledge points, Test Milestones and Air Vehicle (AV) Deliveries have shifted due to delays in the build of EDM and SDTAs and the Static Test Article due to supplier related quality escapes and learning associated with full size determinant assembly (FSDA) manufacturing processes. Production path forward determined and implemented for known quality escapes. End result has aircraft deliveries planned for FY23 now occurring in FY24 and FY25.

PU 3279: R-4 Schedule updated to reflect current CVN install schedule along with latest UCA and CVN Test Windows.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy										Date: March 2023		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>				Project (Number/Name) 3278 / MQ-25 Air System (AS)			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
3278: MQ-25 Air System (AS)	1,489.675	212.150	227.443	201.945	-	201.945	141.960	135.117	137.194	139.962	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: P462												

A. Mission Description and Budget Item Justification

The scope of the program includes, but is not limited to, system level requirements identification, allocation of requirements to segments and components, design, development, integration, fabrication, test, training, and support activities to provide the MQ-25 capabilities. To provide these capabilities, MQ-25 will transition technologies from other programs and adapt them into the carrier environment. MQ-25 will deliver the necessary air vehicles, command, control, connectivity, shipboard and land-based launch and recovery control systems, associated support systems, interfaces, and upgrades to other Navy systems (as required) to meet the required capabilities.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Air Segment Product Development	105.452	100.418	80.868	0.000	80.868
Articles:	-	-	-	-	-
Description: Air Segment Product Development efforts include, but are not limited to, design, development, integration, fabrication, test and training to deliver a carrier-suitable, semi-autonomous, unmanned vehicle capable of aerial refueling (give) and persistent Intelligence, Surveillance, and Reconnaissance (ISR) operations.					
FY 2023 Plans: Continue Air Vehicle development, design, and integration. Continue the build of EDM and SDTA air vehicles. Continue development of technical publication source data. Additionally, the program will continue to develop and perform software lab testing. Continue software correction of deficiency efforts. Continue development of software and hardware to support post IOC additive capabilities to account for current threats identified post EMD contract award. Continue efforts to support post IOC such as advanced training tactics and techniques; obsolescence, sustainment and other studies related to operational employment learned since EMD contract award. Continue software integration efforts related to GCS.					
FY 2024 Base Plans: Continue Air Vehicle development, design, and integration. All four Engineering Development Models and one of the three System Demonstration Test Articles will deliver to the test program to support ground and flight testing. Continue development of logistics products source data. Continue development of Ground Control Station integration software. Continue development of software and hardware to support IOC and post IOC additive					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
<p>capabilities to account for current threats identified post Engineering Development Models contract award. Continue efforts to support IOC and beyond such as advanced training tactics and techniques; obsolescence, sustainment and other studies related to operational employment learned since EMD contract award. Continue software integration efforts related to the Ground Control Station.</p> <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease from FY23 to FY24 due to the completion of ground/software lab testing. Personnel begin to transition from development to production efforts.</p>					
<p>Title: Lead Systems Integration (LSI) Product Development</p> <p align="right">Articles:</p> <p>Description: Lead Systems Integration (LSI) is a Government-led effort including, but not limited to, advanced development, architecture development, interface definition, integration, system level test and evaluation, science and technology investments, roadmap refinement, and coordination of all MQ-25 capabilities across system segments and stakeholders.</p> <p>FY 2023 Plans: Continue integration of GCS and software. Continue Air Segment and UMCS development, design, and integration with the GCS. Continue government led efforts that support science and technology investments and roadmap refinement. Complete Cyber Security efforts to achieve Authority to Operate (ATO) certifications for the System Test and Integration Lab (STIL), the Lab Revitalization Program (LRP), and test facilities. Continue operation of the STIL in support of government led hardware and software development and test activities. Continue STIL activities in support of correction of deficiencies. Continue government and contractor STIL integration activities in support of software verification and validation. Maintain connection between STIL and AS contractor labs. Continue to conduct and support ground and lab test activities at contractor facilities. Continue to conduct and support laboratory tests in support of EDM aircraft systems.</p> <p>FY 2024 Base Plans: Continue integration of the GCS and software. Continue AS and UMCS development, design, and integration with the GCS. Continue government led efforts that support science and technology investments and roadmap refinement. Maintain Cyber Security efforts to achieve ATO certifications for the STIL, Lab Revitalization Program and test facilities. Continue operation of the STIL in support of government led hardware and software</p>	62.772	68.382	60.617	0.000	60.617
	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
development and test activities. Continue STIL activities in support of GCS software integration correction of deficiencies. Continue government and contractor STIL integration activities in support. FY 2024 OCO Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: Decrease from FY23 to FY24 is due to completion of Cyber Security efforts to achieve Authority to Operate (ATO) certifications for the System Test and Integration Lab (STIL), the Lab Revitalization Program (LRP), and test facilities as well as integration events that support Initial Operational Test and Evaluation (IOT&E).					
Title: Management Articles: Description: Efforts include program, engineering, test, and logistics management to include travel. FY 2023 Plans: Continue oversight, coordination, and management of MQ-25 acquisition, system interface and integration activities. Oversee contract activities, to include execution of the EMD contract, travel and training. Conduct logistics management tasks. Maintain security and program office environments. FY 2024 Base Plans: Continue oversight, coordination, and management of MQ-25 acquisition, system interface and integration activities. Oversee contract activities, to include execution of the EMD contract, travel, and training. Conduct logistics management tasks. Maintain security and program office environments. FY 2024 OCO Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: Decrease from FY23 to FY24 due to personnel transition from development to production efforts.	7.475 -	7.805 -	6.082 -	0.000 -	6.082 -
Title: Test and Evaluation Articles: Description: Description: Provide Government Integrated Test and Evaluation and Performance Based Specifications (PBS) compliance verification; support equipment evaluations and assessments, instrumentation development and support, and Integrated Test support.	32.925 -	44.669 -	50.803 -	0.000 -	50.803 -

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
<p><i>FY 2023 Plans:</i> Continue to support development, implementation, and sustainment of test facilities, range, and lab test requirements. Support updates to the TEMP, support engineering events, and program management activities. Support activities in Modeling and Simulation development to include validation and verification. Continue support of the Government STIL and continue stand up of the integrated test facilities in support of the EMD contract, to include test facility installation, integration, procurement of support equipment, and accreditation activities. Provide government engineering to support contractor testing in support of Initial UMCS Flight.</p> <p><i>FY 2024 Base Plans:</i> Continue to support development, implementation, and sustainment of test facilities, range, and lab test requirements. Support updates to the Test and Evaluation Master Plan, support engineering events, and program management activities. Support activities in Modeling and Simulation development to include validation and verification. Continue support of the Government System Test and Integration Lab and continue stand up of the integrated test facilities in support of the Engineering Manufacturing and Development contract, to include test facility installation, integration, procurement of support equipment, and accreditation activities. Provide government engineering to support contractor testing and ground/flight test of Engineering Development Models and System Demonstration Test Articles.</p> <p><i>FY 2024 OCO Plans:</i> N/A</p> <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY24 funding increase to support the shift of the Engineering Development Model flight test program to reflect new aircraft delivery dates in FY24.</p>					
<p><i>Title:</i> Support</p> <p align="right"><i>Articles:</i></p> <p><i>Description:</i> Efforts include studies, analyses, and training development support.</p> <p><i>FY 2023 Plans:</i> Continue to mature the Logistics Product Database, Technical publications, NATOPS publications, and continue to build a Product Lifecycle system to share air system data and resources in an efficient configuration managed environment. Begin to train IOT&E and Squadron (VUQ-10) Fleet operators and maintainers and begin training</p>	3.526	6.169	3.575	0.000	3.575
	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
NATEC services in support of post IOT&E activities ("train the trainer" events). Continue development of logistics products associated with GCS. FY 2024 Base Plans: Continue to mature the Logistics Elements including the Logistics Product Database (LPD), Aviation Logistics Environment (ALE), Interactive Electronic Technical Manual (IETM), Naval Air Training and Operating Procedures Standardization (NATOPS) publications, Common and Peculiar Support equipment (C/PSE) and continue to build a Product Lifecycle Management (PLM) system to share air system data and resources in an efficient configuration managed environment. Evaluate and track maintainability and obsolescence issues including their impact on supportability. Continue to train IOT&E Squadron Fleet operators and maintainers and training Naval Air Technical Data and Engineering Services Command (NATEC) services in support of post IOT&E activities ("train the trainer" events). Continue development of logistics products associated with the Ground Control Station. FY 2024 OCO Plans: N/A FY 2023 to FY 2024 Increase/Decrease Statement: Decrease from FY23 to FY24 due to personnel transition from development to production efforts.					
Accomplishments/Planned Programs Subtotals	212.150	227.443	201.945	0.000	201.945

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• APN/0449C: MQ-25 <i>Unmanned Carrier Aviation, AP</i>	47.468	51.463	50.576	-	50.576	51.570	52.554	83.684	87.729	602.698	1,027.742
• APN/0605 J0449: <i>MQ-25 APN SPARES</i>	57.749	133.541	144.789	-	144.789	107.136	116.037	116.746	177.711	Continuing	Continuing
• APN/0449: MQ-25 <i>Unmanned Carrier Aviation, APN-4</i>	0.000	744.181	597.160	-	597.160	705.540	707.574	722.495	1,039.612	7,099.479	11,616.041

Remarks
APN 0449C is advanced procurement for the MQ-25A AS to procure Low Rate Initial Production (LRIP) long-lead items.
APN 0605 spares supports the APN-4 efforts for sparing.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
APN 0449 is APN-4 regular supporting the manufacturing and production of MQ-25 AS LRIP aircraft.											

D. Acquisition Strategy

Based on the Government's acquisition strategy approved in April 2017, the MQ-25 program is an evolution from the previous Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) program and is an Acquisition Category (ACAT) IB program managed by Program Executive Office, Unmanned Aviation & Strike Weapons (PEO(U&W)), PMA-268 Unmanned Carrier Aviation (UCA) Program Office. Pursuant to 10 U.S.C. 2430(d)(1), the Milestone Decision Authority (MDA) is ASN(RDA).

MQ-25 requirements are aligned with the UCLASS Initial Capabilities Document (ICD) and the Next Generation Air Dominance (NGAD) Family of Systems (FoS) Initial Capabilities Document, which highlight the need for carrier-based refueling and persistent ISR capabilities. The Joint Requirements Oversight Council (JROC) endorsed the UCLASS ICD in April 2011 and formally approved it on 9 June 2011 via JROC Memorandum (JROCM) 087-11. The NGAD Family of Systems ICD was validated by the JROC on 18 August 2015 and formally approved by JROCM 087-15. The JROC's guidance delineated in the validated ICD and subsequent JROCMs were to establish a requirement for a versatile platform that supports a myriad of organic Naval missions such as aerial refueling and ISR for the CVW. The JROC validated the Capability Development Document (CDD) for MQ-25 Carrier Based Unmanned Air System (CBAUS) on 21 July 2017. Through a highly competitive source selection, the EMD contract was awarded in August 2018, and moved the IOC objective four years earlier to 2024. The Navy recognized investments were required to support the shorter schedule and received support to increase the number of test CVN installs from two to four and exercised an option for SDTA production to start in FY20. Due to the UMCS FY20 budget reduction (PU 3279) in PB20, modifications ceased on two of the four test CVNs which made it highly likely IOC would be delayed by at least 10 months. The shift to a mature, industry developed GCS mitigated some of this risk, by providing an embarkable GCS that can be used for testing on any Joint Precision Approach and Landing System (JPALS)-equipped CVN. The latest projection for MQ-25A IOC is July 2026 and the program continues to look for opportunities to mitigate additional schedule risk. A stable funding base for both MQ-25 (PU 3278) and UMCS (PU 3279) remains critical to successfully delivering MQ-25A on an aggressive timeline as the two programs are tightly linked.

MQ-25 is implementing an evolutionary acquisition strategy to develop, fly, deploy, and evolve the MQ-25 Air Vehicle for IOC and fleet integration. This MQ-25 acquisition strategy continues with entry into flight test, correction of deficiencies work, and stand up of logistics and training efforts in conjunction with continued CVN modifications required for a decision to proceed to IOT&E and IOC in FY2026.

MQ-25 awarded a fixed price incentive, firm target (FPIF) contract for the AS EMD contract to Boeing in August 2018. As a result of ASN(RDA) and OPNAV N9 directing new requirements for the MQ-25 GCS, a contract was awarded to Boeing in December 2020 to fund integration of a new, more capable GCS provided as government furnished equipment (GFE) and government furnished information (GFI) by PMA-268.

MQ-25, as part of the evolutionary acquisition strategy, will begin to utilize a Corporate Basic Ordering Agreement (BOA) for engineering studies, nonrecurring engineering to pace emerging threats and capabilities needed for operational environment, sustainment, and training efforts.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>

MQ-25 is dependent upon the UMCS program to provide CVN-based GCS systems that are integrated into CVN networks.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy												Date: March 2023			
Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0605414N / Unmanned Carrier Aviation (UCA)				Project (Number/Name) 3278 / MQ-25 Air System (AS)							
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Air Segment - Primary Hardware Development	C/FPIF	Boeing : St. Louis, MO	830.883	23.282	Dec 2021	31.789	Dec 2022	20.601	Dec 2023	-		20.601	6.000	912.555	912.555
Air Segment - Primary Hardware SDTA	C/FPIF	Boeing : St. Louis, MO	84.700	0.000		0.000		0.000		-		0.000	0.000	84.700	84.700
Air Segment - Primary Hardware ESA	C/CPIF	Boeing : St. Louis, MO	16.572	1.000	Mar 2022	0.000		24.289	Mar 2024	-		24.289	0.000	41.861	22.267
Air Segment - Primary Hardware BOA	C/BOA	Boeing : St. Louis, MO	0.000	32.536	Aug 2022	11.000	Aug 2023	0.000		-		0.000	0.000	43.536	-
Air Segment- Primary Hardware Development	C/CPIF	Boeing : St. Louis, MO	31.489	15.964	May 2022	14.286	May 2023	3.000	May 2024	-		3.000	25.278	90.017	115.033
Air Segment - Systems Engineering	WR	NAWCAD : Patuxent River, MD	57.922	30.030	Nov 2021	38.062	Nov 2022	30.325	Nov 2023	-		30.325	Continuing	Continuing	Continuing
Air Segment - Systems Engineering	WR	NAWCWD : China Lake, CA	4.351	1.360	Nov 2021	4.000	Nov 2022	1.374	Nov 2023	-		1.374	Continuing	Continuing	Continuing
Air Segment - Systems Engineering	Various	Various : Various	4.024	1.280	Nov 2021	1.281	Nov 2022	1.279	Nov 2023	-		1.279	Continuing	Continuing	Continuing
CS&C Segment	Various	Various : Various	58.911	0.000		0.000		0.000		-		0.000	0.000	58.911	-
Carrier Segment (Ship Integration)	Various	Various : Various	42.882	0.000		0.000		0.000		-		0.000	0.000	42.882	-
LSI - Advanced Development (Primary Hardware Development)	Various	Various : Various	1.272	0.000		0.000		0.000		-		0.000	0.000	1.272	-
LSI - Systems Engineering	Various	Various : Various	21.810	5.119	Nov 2021	5.636	Nov 2022	4.948	Nov 2023	-		4.948	Continuing	Continuing	Continuing
LSI - Systems Engineering	WR	NAWCAD : Patuxent River, MD	126.052	54.153	Nov 2021	58.892	Nov 2022	52.249	Nov 2023	-		52.249	Continuing	Continuing	Continuing
LSI - Systems Engineering	Various	NAVWAR : San Diego, CA	14.899	2.000	Nov 2021	2.202	Nov 2022	1.954	Nov 2023	-		1.954	Continuing	Continuing	Continuing
LSI - Integrated Digital Environment	SS/FFP	NAWCAD : Lakehurst, NJ	14.830	1.500	Mar 2022	1.652	Mar 2023	1.466	Mar 2024	-		1.466	Continuing	Continuing	Continuing
Air Segment -Primary Hardware Development	WR	NSMA : Washington, DC	7.800	0.000		0.000		0.000		-		0.000	0.000	7.800	7.800
Subtotal			1,318.397	168.224		168.800		141.485		-		141.485	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy **Date:** March 2023

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / <i>MQ-25 Air System (AS)</i>
--	--	---

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Manpower Studies & Analyses	Various	Various : Various	0.690	0.200	Nov 2021	0.214	Nov 2022	0.124	Nov 2023	-		0.124	Continuing	Continuing	Continuing
Training Development	Various	Various : Various	13.002	3.326	Nov 2021	5.955	Nov 2022	3.451	Nov 2023	-		3.451	Continuing	Continuing	Continuing
Subtotal			13.692	3.526		6.169		3.575		-		3.575	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Developmental Test & Evaluation (DT&E)	WR	NAWCAD : Patuxent River, MD	118.798	31.191	Nov 2021	42.914	Nov 2022	49.037	Nov 2023	-		49.037	Continuing	Continuing	Continuing
Developmental Test & Evaluation (DT&E)	C/BA	Various : Various	7.108	1.734	Nov 2021	1.327	Nov 2022	1.296	Nov 2023	-		1.296	0.000	11.465	-
Operational Test & Evaluation (OT&E)	C/BA	Various : Various	0.000	0.000		0.428	Nov 2022	0.470	Nov 2023	-		0.470	0.000	0.898	-
Subtotal			125.906	32.925		44.669		50.803		-		50.803	Continuing	Continuing	N/A

Remarks
Increase from FY23 to FY24 due to the first 4 EDM and 1 SDTA aircraft beginning ground testing.

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Management	Various	Various : Various	8.317	1.840	Nov 2021	1.921	Nov 2022	1.530	Nov 2023	-		1.530	Continuing	Continuing	Continuing
Management	WR	NAWCAD : Patuxent River, MD	22.778	5.500	Nov 2021	5.744	Nov 2022	4.441	Nov 2023	-		4.441	Continuing	Continuing	Continuing
Management	Various	NAVAIR : Patuxent River, MD	0.585	0.135	Oct 2021	0.140	Oct 2022	0.111	Oct 2023	-		0.111	Continuing	Continuing	Continuing
Subtotal			31.680	7.475		7.805		6.082		-		6.082	Continuing	Continuing	N/A

Appropriation/Budget Activity
1319 / 5

R-1 Program Element (Number/Name)
PE 0605414N / Unmanned Carrier Aviation
(UCA)

Project (Number/Name)
3278 / MQ-25 Air System (AS)



PMA-268 PB24 BASELINE SCHEDULE

Color Legend

- Major Milestone: ★
- Boeing Delivery: ▽
- Program Event: ▬
- Program Milestone: ◆
- Boeing/Lockheed Work: ▬

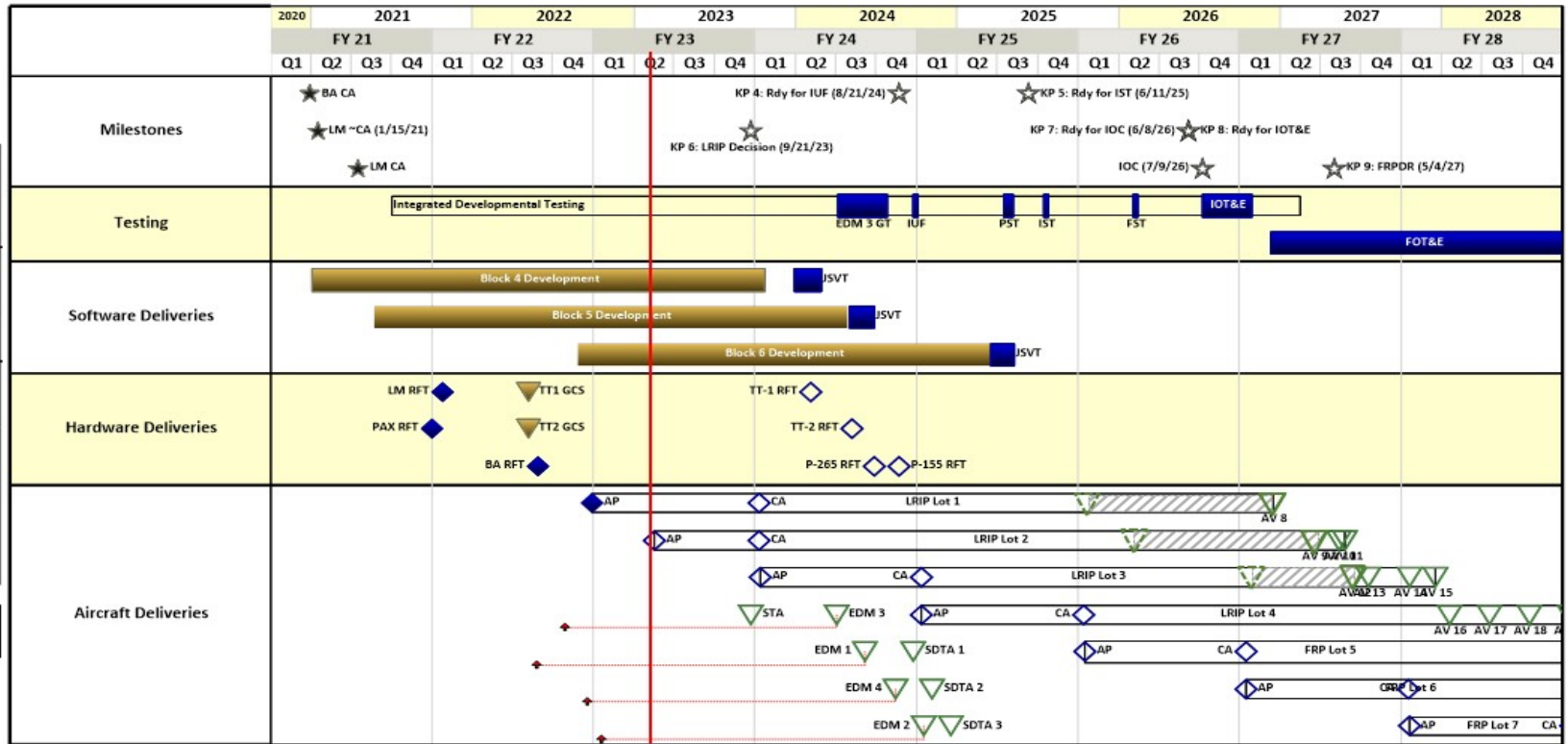
Gantt-bar diagram

- Critical path: (Red bar)
- Current schedule: (Blue bar)

Milestone diagram

- Complete: ★
- Incomplete: ☆

Obsolescence Redesign Delivery impact: (Hatched bar)



Note: This depiction of the program Integrated Government Schedule is a resource for government planning purposes only and shall not be construed as a modification to delivery or performance requirements set forth in the contract.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3278 / MQ-25 Air System (AS)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
MQ-25				
Acquisition Milestones: Milestones & Reviews: EDM Delivery 1	3	2024	3	2024
Acquisition Milestones: Milestones & Reviews: EDM Delivery 2	1	2025	1	2025
Acquisition Milestones: Milestones & Reviews: EDM Delivery 3	2	2024	2	2024
Acquisition Milestones: Milestones & Reviews: EDM Delivery 4	3	2024	3	2024
Acquisition Milestones: Milestones & Reviews: KP4 First Ready for IUF	4	2024	4	2024
Acquisition Milestones: Milestones & Reviews: KP5 Ready for IST	3	2025	3	2025
Acquisition Milestones: Milestones & Reviews: Initial Sea Trials	4	2025	4	2025
Acquisition Milestones: Milestones & Reviews: KP6 AV MS C	4	2023	4	2023
Acquisition Milestones: Milestones & Reviews: KP7 Ready for IOC	3	2026	3	2026
Acquisition Milestones: Milestones & Reviews: T-1 Hoist Aboard	1	2022	1	2022
Acquisition Milestones: Milestones & Reviews: Initial Operational Test and Evaluation	3	2026	1	2027
Acquisition Milestones: Milestones & Reviews: IOC	4	2026	4	2026
Acquisition Milestones: Milestones & Reviews: System Demonstration Test Article 1 Delivery	4	2024	4	2024
Acquisition Milestones: Milestones & Reviews: System Demonstration Test Article 2 Delivery	1	2025	1	2025
Acquisition Milestones: Milestones & Reviews: System Demonstration Test Article 3 Delivery	1	2025	1	2025
Acquisition Milestones: Milestones & Reviews: Follow on Test and Evaluation	1	2027	4	2028
Acquisition Milestones: Milestones & Reviews: FRP Decision	3	2027	3	2027
Systems Development: MQ-25 System Design & Integration: Software Integration	4	2022	1	2025
Systems Development: Air Segment: ITT and Integration Support	1	2022	2	2027

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy										Date: March 2023		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>				Project (Number/Name) 3279 / <i>Unmanned Carrier Aviation Mission Control System</i>			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
3279: <i>Unmanned Carrier Aviation Mission Control System</i>	164.867	45.737	27.003	18.459	-	18.459	16.344	18.569	17.654	18.013	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Unmanned Carrier Aviation (UCA) Mission Control System (UMCS) program develops, modifies, builds, integrates, and installs control systems required to operate the MQ-25A. The Unmanned Carrier Aviation Mission Control System program includes what was previously identified as the Control System & Connectivity (CS&C) and Carrier Vessel, Nuclear (CVN) Integration (CVNI) Segments previously captured under the MQ-25 Development PU 3278.

The Unmanned Carrier Aviation Mission Control System program, PU 3279, is the system-of-systems required for MQ-25 vehicle and payload control both shipboard and shore based. Unmanned Carrier Aviation Mission Control System consists of all ground and ship based hardware, software, and networks associated with the planning and execution of flight operations and tactical missions. In addition to Ground Control Station (GCS), consisting of Air Vehicle Operator (AVO) workstations and servers, the Unmanned Carrier Aviation Mission Control System program builds hardware to support line of sight (LOS) communications, beyond line of sight (BLOS) satellite communications (SATCOM), and integration with ship/shore based systems. There are three variants of the GCS: MD-5C (CVN-based), MD-5D (Shore-based) and MD-5E (Embarkable system) for use on CVNs that do not yet have permanent GCS systems installed. Unmanned Carrier Aviation Mission Control System leverages existing Programs of Record for network integration and LOS/BLOS communications and builds MQ-25 unique systems (e.g. an ARC-210 based LOS communication system and a Video Management System (VidMS) for AVO situational awareness). The GCS streamlines software development, supports multiple classification levels, and positions MQ-25A interoperability with other DoD systems. Hardware development and fabrication is one facet of the program. Unmanned Carrier Aviation Mission Control System develops and integrates software and modifies several aircraft carrier spaces to install and integrate the GCS and communication systems, in support of MQ-25A test events and operations aboard select NIMITZ Class CVNs. The Unmanned Carrier Aviation Mission Control System program modifies and integrates with existing, external Command, Control, Communication, Computers, and Intelligence (C4I) systems to provide network paths for air vehicle and mission payload data using a variety of wideband and narrowband communication paths. Unmanned Carrier Aviation Mission Control System accomplishes this by integrating the GCS and the MQ-25A Air Vehicle with multiple networks and systems both at sea and on shore.

Unmanned Carrier Aviation Mission Control System builds the following hardware: MQ-25A GCS, Video Management System (VidMS), ARC-210 Radio Communication System (RCS), and Ashore Routing Communication System (ARCS). The GCS consists of the following components: air vehicle operator (AVO) workstations, server racks, network interface racks, integrated communication system (ICS), Data Transfer System (DTS), and software. The ship variant (MD-5C) will leverage the shore based system components but will have manufacturing differences to account for the harsher CVN environment. The VidMS provides situational awareness displays of the CVN environment. The ARC-210 and Digital Modular Radio (DMR) systems provide narrowband command and control (C2) communications between the GCS and the MQ-25A. An ICS 1/2 rack integrates the GCS with existing carrier communication systems. The ARCS provides an interface between the shore GCS sites and the Command, Control, Communication, Computers, and Intelligence (C4I) networks enabling wide-band LOS and BLOS communications with the MQ-25A. Unmanned Carrier Aviation Mission Control System also leverages NAVWAR baseline systems on board the CVNs and at the MQ-25A shore sites.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy **Date:** March 2023

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3279 / <i>Unmanned Carrier Aviation Mission Control System</i>
--	--	--

Unmanned Carrier Aviation Mission Control System leads development, modification, engineering, and integration activities, to facilitate seamless voice, data, and C2 exchanges with the MQ-25A AV, local networks, voice networks, C2 networks, tactical networks, intelligence systems, and launch and recovery systems by collaborating with existing NAVWAR, NAVAIR and NAVSEA Programs of Record (PoRs).

CVN modification and installation is governed by the Naval Sea Systems Command (NAVSEA) Navy Modernization Process (NMP). This process defines the schedule for submitting documentation, drawings, and hardware to support CVN modifications. Unmanned Carrier Aviation Mission Control System modifications must occur during pre-planned maintenance periods that are updated at least twice per year. Changes to these maintenance periods drive changes to the Unmanned Carrier Aviation Mission Control System installation schedule. The NMP consists of multiple phases. Phase 1, approximately three years before the availability period, consists of developing the system design, technical data, installation guidance, and Ship Change Documents (SCDs). Phase 2, approximately two years before the maintenance period, consists of hull specific ship checks, drawing development and hardware procurement. Phase 3, one year before the maintenance period, consists of drawing approval, install schedule development, completion of cybersecurity and logistics documentation, and GCS integration testing. Phase 4 occurs during the maintenance period and consists of CVN infrastructure modification, hardware installation, and completion of ship-board integrated verification testing. CVN modifications and installations are based on the number of SCDs and the length of the planned maintenance period. Due to the size and complexity of the Unmanned Carrier Aviation Mission Control System modifications, a minimum of two 6-month maintenance periods is required for a full installation.

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

	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Title: Unmanned Carrier Aviation (UCA) Mission Control System	45.737	27.003	18.459	0.000	18.459
Articles:	-	-	-	-	-
<p>Description: Description: The Unmanned Carrier Aviation Mission Control System program is a Government-led effort which includes, but is not limited to, development, integration, installation, and testing of the Unmanned Carrier Aviation Mission hardware and software, upgrades to existing CVN infrastructure to support accelerated delivery of MQ-25 capabilities, unique modifications to the Joint Precision Approach Landing System (JPALS) and the Aircraft Launch and Recovery Equipment (ALRE) to support specific MQ-25A capabilities, and integration with C4I systems.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Complete GCS software development and integration with MQ-25A AV software - Develop software Correction of Deficiency (CoD) builds based on lab, ground, and shore-based flight testing - Complete VidMS redesign due to End of Life (EOL) components and removal of the video wall and support station based on new GCS design - Complete development, qualification, and testing of the URC-300 radio - Complete development, qualification, and testing of the Unmanned Carrier Aviation (UCA) Transport System (UTS) - Correct ancillary system problems identified during Initial UMCS Flight (IUF) 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3279 / <i>Unmanned Carrier Aviation Mission Control System</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
<ul style="list-style-type: none"> - Complete assembly, integration, and test of the MD-5E CVN Embarkable system - Finalize guidance packages and interface control documentation for the MD-5E CVN Embarkable system - Complete the planning and infrastructure installation for the MD-5E on CVNs A and D - Install the MD-5E Embarkable system on one of the four test carriers - Finalize interface design between the MD-5E and ancillary/communication/network systems - Develop Technical Data Packages for system level components - Maintain Cybersecurity certifications for the GCS, VidMS, ARC-210 RCS, ARCS, and other ancillary systems - Lab integration and test support for ARCS with the MD-5D GCS and C4I Networks - C4I Test & Integration Support for Wideband Line of Sight (LOS) and Beyond LOS (BLOS) programs of record: Network Tactical Common Datalink (NTCDL) and Military/Commercial SATCOM - Provide for NRE and integration of C4I systems at operational fixed control shore stations <p>FY 2024 Base Plans:</p> <ul style="list-style-type: none"> - Install Embarkable, Test Trailer and Test unique equipment on CVN B to support at sea testing of MQ-25 in FY25 - Install MD-5E hardware in the Unmanned Air Warfare Center (UAWC), Test Trailer and Test unique equipment on CVN A to support at sea testing of MQ-25 in FY25 - Tasking for SIDs development on CVN C and CVN B to support installation of Test Trailer and Test unique equipment to support at sea testing of MQ-25 in the late FY25 and early FY26 timeframe - Continue development of Technical Data Packages for system level components - Finalize interface design between the MD-5E and ancillary/communication/network systems - Complete assembly, integration and test of the MD-5E CVN Emabarkable system - Finalize guidance packages and interface control documentation for the MD-5E CVN Embarkable system <p>FY 2024 OCO Plans: N/A</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease from FY23 to FY24 due to MD-5C work transition to OPN. Majority of tasking is now related to Embarkable work.</p>					
Accomplishments/Planned Programs Subtotals	45.737	27.003	18.459	0.000	18.459

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy **Date:** March 2023

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3279 / <i>Unmanned Carrier Aviation Mission Control System</i>
--	--	--

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/4269: <i>UMCS- Unman Carrier Aviation (UCA) Mission Cntrl Stn</i>	67.226	134.726	152.687	-	152.687	131.201	200.476	192.822	197.087	Continuing	Continuing
• OPN/9020/J4269: <i>Spares for Unmanned Carrier Aviation (UCA)</i>	0.000	3.246	8.150	-	8.150	10.333	10.126	10.427	4.563	Continuing	Continuing

Remarks

The Unmanned Carrier Aviation (UCA) Mission Control System (UMCS) program builds, integrates, installs, and sustains GCSs required to operate the MQ-25A AV via CVNs or shore sites.

- RDTE will fund the redesign of the CVN infrastructure; design, assembly, and installation of an embarkable GCS to support testing; software development to support MQ-25A AV development and certification of new software for UMCS on Navy IT systems/platforms; product development modifying existing systems with new capabilities for integration with or utilization by UMCS.

- OPN will fund the modification of CVN infrastructure and installation of hardware on CVNs and operational shore sites; incorporation of UMCS into existing Post MS-C PoRs (i.e. NAVWAR - C4I, ADNS, SATCOM, Secure Shore Integration; NAVAIR - ALRE, JPALS); Tech Refresh which includes replacement of a portion of selected hardware components on a three year recurring schedule.

D. Acquisition Strategy

In February 2019, the Unmanned Carrier Aviation (UCA) Mission Control System (UMCS) program was designated an ACAT II program, a separate PoR from the MQ-25 Air System (AS) ACAT IB. However both PoRs, Unmanned Carrier Aviation Mission Control System and MQ-25, are required to field an Unmanned Carrier Aviation Mission Control System. MQ-25 Air System is dependent on Unmanned Carrier Aviation Mission Control System to meet the program's 2026 IOC.

- Due to the close alignment of requirements with MQ-25 Air System, interoperability, and parent documentation, the Unmanned Carrier Aviation Mission Control System PoR will leverage MQ-25 PoR acquisition events and milestones as part of the acquisition strategy for oversight and approvals.

- The Unmanned Carrier Aviation Mission Control System government team is performing the role of the Lead Systems Integrator (LSI) for the Ground Control System (GCS).

- In order to expedite fielding of Unmanned Carrier Aviation Mission Control System and to align with the IOC requirements for the MQ-25 SoS, the program team has and will continue to leverage systems with high Technology Readiness Levels, largely consisting of Commercial and Government Off the Shelf systems (i.e. COTS and GOTS) to the greatest extent possible.

The latest Unmanned Carrier Aviation Mission Control System acquisition strategy was approved on 25 July 2019. The Unmanned Carrier Aviation Mission Control System PoR will use an evolutionary acquisition approach to develop, integrate, test, deploy, and evolve the capabilities throughout the life of the system. The Unmanned Carrier Aviation Mission Control System requires integration of multiple products with the primary developmental system being the software dominant GCS.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3279 / <i>Unmanned Carrier Aviation Mission Control System</i>

Prior to FY21, PMA-268 had been developing a government-furnished Ground Control Station (GCS) known as MD-5A and MD-5B as part of its Unmanned Carrier Aviation Mission Control System program, the system-of systems required for command and control of the MQ-25A Air Vehicle (AV) and payload. In September 2020, Navy leadership directed the MQ-25 program to transition to a mature, industry-developed GCS capable of Joint All Domain Command and Control (JADC2) interoperability and meeting multi-level security requirements. The new Lockheed Martin designed and built GCS will streamline software development, readily support multiple classification levels, and position the MQ-25 for interoperability with other DoD systems. With the decision to switch to an industry developed GCS, work associated with integrating the new GCS into the MQ-25A Air Vehicle and payload was put on contract with Boeing (for integration) in December 2020 and Lockheed Martin (via NSMA) in April 2021.

Unmanned Carrier Aviation Mission Control System hardware procurements will accommodate CVN installation, testing, and deployment constraints as well as ship modification schedule constraints.

- Because the Unmanned Carrier Aviation Mission Control System is integrated and installed aboard CVNs, PMA-268 must follow the ship modernization process, which directs delivery dates for deliverables and installation milestones associated with a CVN maintenance availability period. The lead-time associated with this process drives the timeline to design, develop, and procure equipment ahead of the planned installation date.

Unmanned Carrier Aviation Mission testing will occur in multiple stages, progressing from standalone testing with an air vehicle simulator, to operating in conjunction with a hardware-in-the-loop air vehicle (hot bench), to shipboard evaluation of Unmanned Air Warfare Center (UAWC) installations. Each version of Unmanned Carrier Aviation Mission Control System will be evaluated for system functionality and usability through a series of capabilities-based test events focused on the execution of mission tanking, recovery tanking, and Intelligence, Surveillance, and Reconnaissance missions. Additional testing to include mission planning, supportability, and reliability will be conducted during dedicated events when not captured concurrently with other tests.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy

Date: March 2023

Appropriation/Budget Activity
1319 / 5

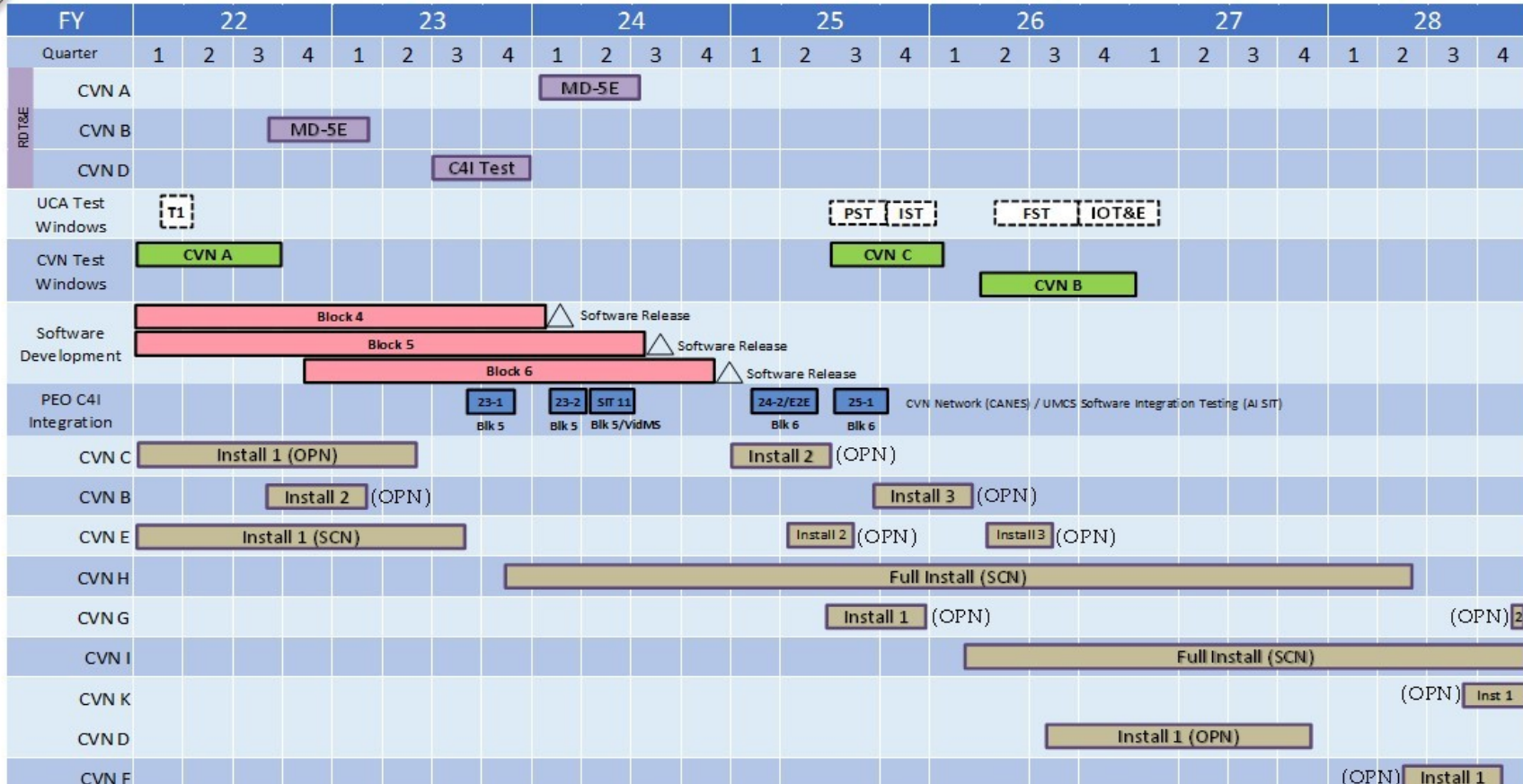
R-1 Program Element (Number/Name)
PE 0605414N / Unmanned Carrier Aviation
(UCA)

Project (Number/Name)
3279 / Unmanned Carrier Aviation Mission
Control System



PMA 268 CVN AVAILABILITY TARGETS (NO HULL #S)

AS OF 23 FEBRUARY 2023 (PMS 312 CVN AVAILABILITY SCHEDULE DATED 27 DECEMBER 2022)



UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Navy		Date: March 2023
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605414N / <i>Unmanned Carrier Aviation (UCA)</i>	Project (Number/Name) 3279 / <i>Unmanned Carrier Aviation Mission Control System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
UMCS				
System Development (RDTE Carriers): UMCS Program (MD-5): CVN B MD-5E Temporary Installation	3	2022	1	2023
System Development (RDTE Carriers): UMCS Program (MD-5): CVN D MD-5E Temporary Installation	3	2023	1	2024
System Development (RDTE Carriers): UMCS Program (MD-5): CVN A MD-5E Temporary Installation	4	2023	2	2024
System Development (RDTE Carriers): UMCS Program (MD-5): UMCS Program: Software (SW) Development/SW Testing/Technology Refresh/SW Integration	1	2022	2	2024
System Development (RDTE Carriers): NAVWAR C4I Integration: AI SIT, ADNS	1	2023	4	2025
Carrier Modifications (OPN Carriers): CVN C Installation 1	1	2022	2	2023
Carrier Modifications (OPN Carriers): CVN C Installation 2	1	2025	3	2025
Carrier Modifications (OPN Carriers): CVN B Installation 2	3	2022	1	2023
Carrier Modifications (OPN Carriers): CVN B Installation 3	3	2025	1	2026
Carrier Modifications (OPN Carriers): CVN D Installation 1	3	2026	4	2027
Carrier Modifications (OPN Carriers): CVN E Installation 2	2	2025	3	2025
Carrier Modifications (OPN Carriers): CVN E Installation 3	2	2026	3	2026
Carrier Modifications (OPN Carriers): CVN F Installation 1	2	2028	4	2028
Carrier Modifications (OPN Carriers): CVN G Installation 1	2	2025	4	2025
Carrier Modifications (OPN Carriers): CVN G Installation 2	4	2028	4	2028
Carrier Modifications (OPN Carriers): CVN K Installation 2	3	2028	4	2028