

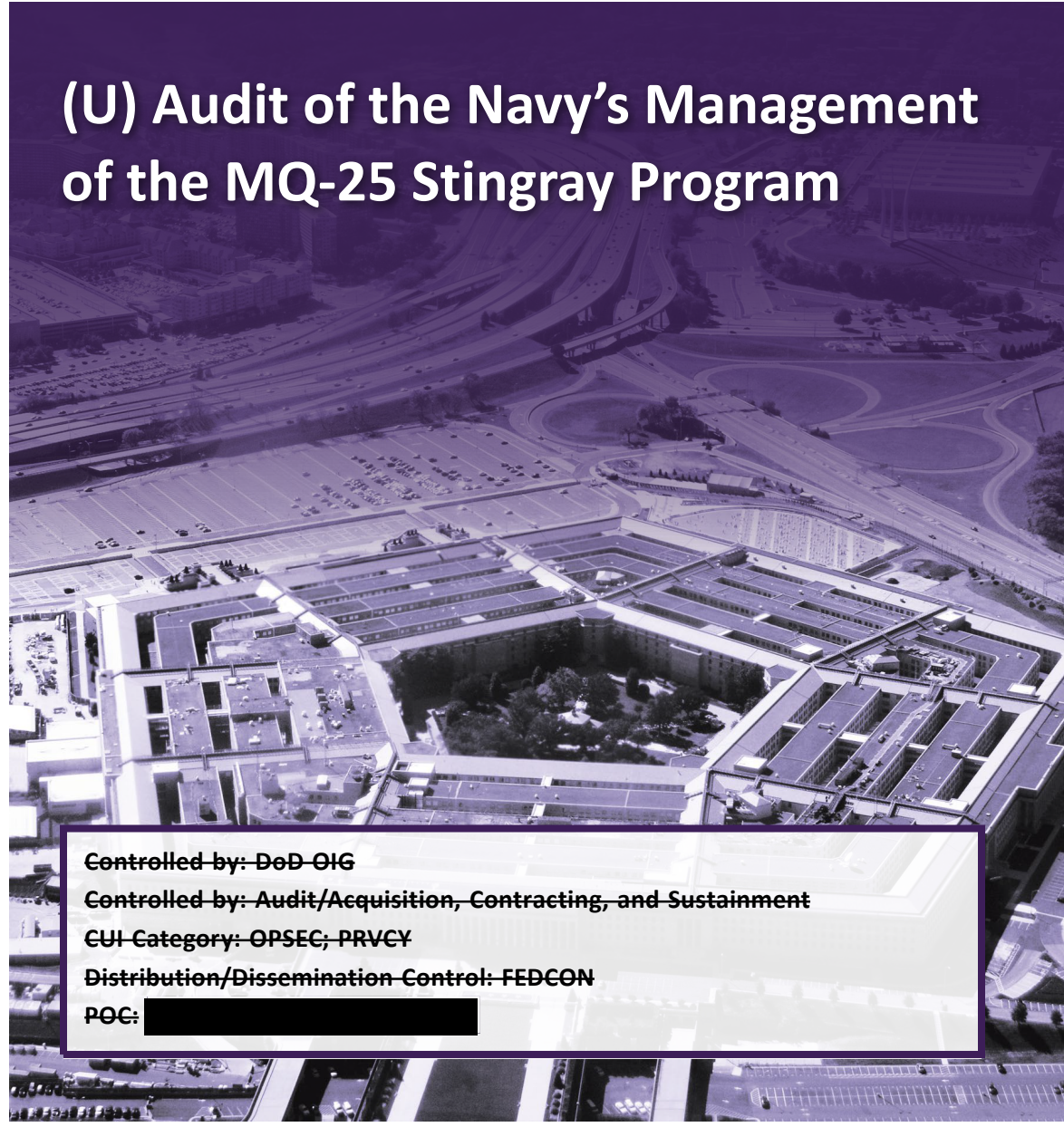


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INSPECTOR GENERAL

U.S. Department of Defense

NOVEMBER 16, 2023



(U) Audit of the Navy's Management of the MQ-25 Stingray Program

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INTEGRITY ★ INDEPENDENCE ★ EXCELLENCE

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(U) Results in Brief

(U) Audit of the Navy's Management of the MQ-25 Stingray Program

November 16, 2023

(U) Objective

(U) The objective of this audit was to determine whether Navy officials effectively managed the MQ-25 Stingray program to meet operational capability requirements.

(U) Background

(U) The MQ-25 Stingray program consists of the MQ-25A unmanned air vehicle and a ground control station. According to the Unmanned Carrier Aviation Program Office (Program Office), the MQ-25A will replace the F/A-18 Super Hornet (F/A-18) currently fulfilling the Navy's nuclear aircraft carrier (CVN)-based aerial refueling needs. The MQ-25A is designed to carry more fuel for longer distances than the F/A-18, and MQ-25 program officials stated the MQ-25As will allow the Navy to execute missions it currently cannot perform.

(U) The Assistant Secretary of the Navy for Research, Development, and Acquisition is the MQ-25 program's Milestone Decision Authority (MDA), with responsibility for the program and authority to approve acquisition program entry into the next phase of the acquisition process. The Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, is responsible for declaring when the MQ-25 program reaches initial operational capability (IOC).

(U) Findings

(U) Navy officials, in coordination with the Program Office, plan to make critical production decisions for the MQ-25 program

(U) Findings (cont'd)

(U) before the Program Office conducts tests and evaluations to verify that the program meets operational capability requirements. Specifically:

- (U) the MDA plans to make the Milestone C (MS-C) decision, allowing the Program Office to begin initial production of the MQ-25A, before the Program Office conducts sufficient developmental test and evaluation (DT&E); and
- (U) the Director of the Air Warfare Division plans to declare IOC, affirming the MQ-25A capable of conducting mission operations, before the Program Office performs initial operational test and evaluation (IOT&E).

(U) Navy officials plan to make these decisions without tests and evaluations because of the Navy's assessment of critical and urgent expected benefits of deploying the MQ-25A. Specifically, if the MQ-25A operates as the Navy expects, it will provide critical support for the National Defense Strategy by extending the range of the CVNs' air wings and reducing the aerial refueling burden on F/A-18s, reducing costs and improving readiness.

(U) Making critical production decisions without performing DT&E and IOT&E increases risk that the MQ-25 program will not meet operational capability requirements, delay deployment of the MQ-25A to the CVNs, and increase program costs.

(U) Recommendations

(U) We recommend that the Assistant Secretary of the Navy for Research, Development, and Acquisition and the Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, either (1) delay the MS-C and IOC decisions until the Program Office conducts sufficient tests and evaluations, or (2) ensure the Program Office updates MQ-25 program risk management documentation to identify, assess, and develop measures to mitigate the impacts of not performing DT&E and IOT&E before the MS-C and IOC decisions. We also recommend the Assistant Secretary of the Navy for Research, Development, and Acquisition ensure the Program Office updates risk documentation to account for the risks of additional delays in receiving the MQ-25A.



(U) Results in Brief

(U) Audit of the Navy's Management of the MQ-25 Stingray Program

(U) Management Comments and Our Response

(U) The Acting Assistant Secretary of the Navy for Research, Development, and Acquisition, and the Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, provided joint comments that partially addressed our recommendations. Therefore, the recommendations are unresolved. We request that the Navy provide comments on the recommendations within 30 days.

(U) Please see the Recommendations Table on the next page for the status of recommendations.

(U) Recommendations Table

(U) Management	Recommendations Unresolved	Recommendations Resolved	Recommendations Closed
(U) Assistant Secretary of the Navy for Research, Development, and Acquisition	1, 2	None	None
(U) Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations	3	None	None

(U)

(U) Please provide Management Comments by December 18, 2023.

(U) Note: The following categories are used to describe agency management’s comments to individual recommendations.

- **(U) Unresolved** – Management has not agreed to implement the recommendation or has not proposed actions that will address the recommendation.
- **(U) Resolved** – Management agreed to implement the recommendation or has proposed actions that will address the underlying finding that generated the recommendation.
- **(U) Closed** – DoD OIG verified that the agreed upon corrective actions were implemented.





OFFICE OF INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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 ALEXANDRIA, VIRGINIA 22350-1500

November 16, 2023

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH,
 DEVELOPMENT, AND ACQUISITION
 AUDITOR GENERAL, DEPARTMENT OF THE NAVY
 DIRECTOR OF THE AIR WARFARE DIVISION, N98,
 OFFICE OF THE CHIEF OF NAVAL OPERATIONS

SUBJECT: (U) Audit of the Navy's Management of the MQ-25 Stingray Program
 (Report No. DODIG-2024-026)

(U) This final report provides the results of the DoD Office of Inspector General's audit. We previously provided copies of the draft report and requested written comments on the recommendations. We considered management's comments on the draft report when preparing the final report. These comments are included in the report.

(U) This report contains recommendations that are considered unresolved because the Assistant Secretary of the Navy for Research, Development, and Acquisition and the Director, Air Warfare Division, N98, Office of the Chief of Naval Operations, did not fully address the recommendations presented in the report. Therefore, the recommendations remain open. We will track these recommendations until management has agreed to take actions sufficient to meet the intent of the recommendations and management officials submit adequate documentation showing that all agreed-upon actions have been completed.

(U) DoD Instruction 7650.03 requires that recommendations be resolved promptly. For the unresolved recommendations, within 30 days please provide us your comments concerning specific actions in process or alternative corrective actions proposed on the recommendations. Send your response to either audacs@dodig.mil if unclassified or rfunet@dodig.smil.mil if classified SECRET.

(U) We appreciate the cooperation and assistance received during the audit. If you have any questions, or would like to meet to discuss the audit, please contact me at [REDACTED].

FOR THE INSPECTOR GENERAL:

A handwritten signature in black ink that reads "Carmen J. Malone".

Carmen J. Malone
 Assistant Inspector General for Audit
 Acquisition, Contracting, and Sustainment

(U) Contents

(U) Introduction

(U) Objective.....	1
(U) Background	1

(U) Finding. Navy Officials Plan to Make Critical Production Decisions Before Conducting Sufficient Tests and Evaluations

(U) Navy Officials Plan to Make Critical Production Decisions Without Sufficient Tests and Evaluations.....	8
(U) The Navy Has Determined That MQ-25 Critical Capabilities Are Urgently Required.....	11
(U) The MQ-25 Program Is at Increased Risk of Not Meeting Operational Capability Requirements.....	11
(U) The Program Office Should Fully Address Risks Before Making the Next Production Decision.....	13
(U) Notice of Concern and MDA Response	14
(U) Additional MQ-25 Program Updates.....	15
(U) The Program Office Should Address Remaining Risks	16
(U) Recommendations, Management Comments, and Our Response.....	17

(U) Appendixes

(U) Appendix A. Scope and Methodology	20
(U) Internal Control Assessment and Compliance.....	21
(U) Use of Computer-Processed Data	21
(U) Use of Technical Assistance	21
(U) Prior Coverage	21
(U) Appendix B. MQ-25 Stingray Acquisition Program Schedules	23
(U) Appendix C. Notice of Concern and Management Response.....	25

(U) Management Comments

(U) Assistant Secretary of the Navy (Research, Development, and Acquisition) and Director, Air Warfare Division, Office of the Chief of Naval Operations.....	31
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(U) Acronyms and Abbreviations

(U) Introduction

(U) Objective

(U) The objective of this audit was to determine whether Navy officials effectively managed the MQ-25 Stingray program to meet operational capability requirements.

(U) Background

(U) The Navy's MQ-25 Stingray program consists of two components:

1. (U) unmanned air vehicles (MQ-25A) that will perform nuclear aircraft carrier (CVN)-based aerial refueling missions, and
2. (U) the unmanned carrier aviation mission control system (UMCS), which includes the ground control station (GCS) for the MQ-25As.¹

(U) The MQ-25A is designed to be the Navy's first dedicated aerial refueler since 2016 and the Navy's first CVN-based unmanned air vehicle. According to the Unmanned Carrier Aviation Program Office (Program Office), when operational, the MQ-25A will replace the F/A-18 Super Hornet (F/A-18) that is currently fulfilling the Navy's CVN-based aerial refueling needs.²

(U) The MQ-25 program is an acquisition category 1B Major Defense Acquisition Program with an estimated cost of \$16.5 billion, including \$3.1 billion for research, development, test, and evaluation, \$12.6 billion for procurement, and \$747.5 million for military construction.³ The Program Office manages the MQ-25 program under the supervision of the Program Executive Office for Unmanned Aviation and Strike Weapons. The Assistant Secretary of the Navy for Research, Development, and Acquisition is the MQ-25 program's Milestone Decision Authority (MDA), the official designated with the overall responsibility for the program with the authority to approve entry of an acquisition program into the next phase of the acquisition process.

(U) DoD Major Capability Acquisition Model

(U) The MQ-25 program, a major defense acquisition program, follows the DoD major capability acquisition model. DoD Instruction 5000.85 states that the major capability acquisition model has three milestone (MS) decisions (MS-A,

¹ (U) Aerial refueling involves the transferring of fuel from a military tanker aircraft to another military aircraft while extending the range or time an aircraft can remain in the air.

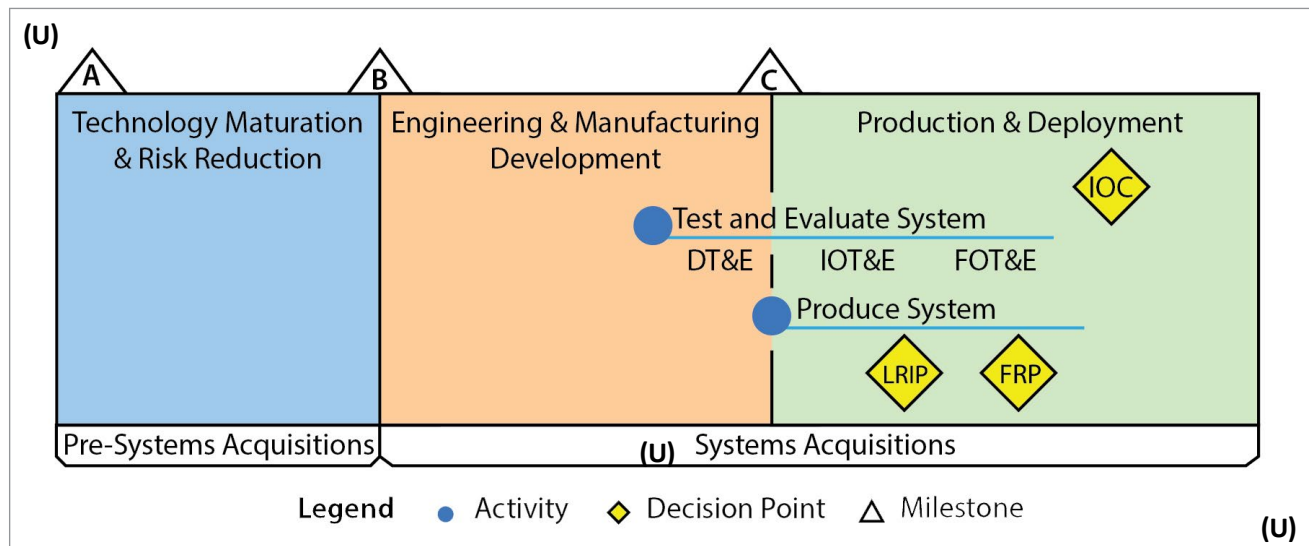
² (U) The F/A 18 E/F Super Hornet is a single-seat or two-seat aircraft that is primarily designed for fighter and attack missions.

³ (U) DoD Instruction 5000.85, "Major Capabilities Acquisition," August 6, 2020, defines acquisition category 1B programs as programs with estimated research, development, test, and evaluation expenditures exceeding \$525 million, or procurement expenditures exceeding \$3.065 billion.

(U) Differences in the sum are due to rounding.

(U) MS-B, and MS-C). At each of the MS decisions, the Instruction requires the MDA to determine whether the program is authorized to enter into the next major acquisition phase. For the purposes of this audit, we focused on MS-B and MS-C decisions and the events that take place in the Engineering and Manufacturing Development (EMD) and Production and Deployment (P&D) phases. Figure 1 shows the different milestones in the major capability acquisition model and when the events that we focused on will typically take place in the EMD and P&D phases after the MS-B and MS-C decisions.

(U) Figure 1. Key Events in the EMD and P&D phases



(U) Note: While DoD Instruction 5000.85 does not list IOC as a decision point, we concluded that determining whether a program has met all of the requirements for IOC declaration is a decision.

(U) Legend

DT&E Developmental Test and Evaluation
 FOT&E Follow On Operational Test and Evaluation
 FRP Full Rate Production
 IOC Initial Operational Capability
 IOT&E Initial Operational Test and Evaluation
 LRIP Low Rate Initial Production

(U) Source: DoD Instruction 5000.85 and the DoD OIG.

(U) Milestone B Decision and the EMD Phase

(U) At MS-B, the MDA determines whether the program will enter the EMD phase. DoD Instruction 5000.85 states that the program office should typically conduct DT&E during the EMD phase. DT&E provides the program office feedback on the progress of the design process and on the product's compliance with contractual requirements, effective combat capability, and the ability to achieve its operational capability requirements. Further, DT&E identifies whether the program is ready for initial operational testing.

(U) Milestone C Decision and the P&D Phase

(U) At MS-C, the MDA determines whether the program will enter the P&D phase. DoD Instruction 5000.85 states that the following events should occur in the P&D phase.

- (U) LRIP – Awarding the LRIP contract commits funds to the initial production of the system. The LRIP contracts to procure production or production-representative articles for IOT&E, establish an initial production base for the system, and permit an orderly increase in the production rate for the system, sufficient to lead to FRP upon successful completion of operational testing.⁴
- (U) IOT&E – IOT&E is conducted on production or production-representative articles to determine whether systems are operationally effective and suitable for intended use by Navy personnel to support an FRP decision.
- (U) IOC – IOC is declared when the system can meet the minimum operational capabilities and the operational organization has been equipped, trained, and is capable of conducting mission operations. According to the Program Office, the Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, is responsible for declaring when the MQ-25 program reaches IOC.
- (U) FRP – FRP is declared when there is demonstrated control of the manufacturing process, acceptable performance, and reliability, as well as establishment of adequate sustainment and support systems.

(U) The operations and support phase begins when the first system is fielded and ends with the disposal of the last system. The operations and support phase includes two major efforts: sustainment and disposal.

⁴ (U) A production-representative article is a system that accurately represents the production configuration system for both hardware and software, but is not produced on a final production line.

(U) The MDA Has Flexibility to Make Program Decisions

(U) DoD Instruction 5000.85, “Major Capability Acquisition,” provides the MDA and program offices flexibility in their acquisition schedules, but states that the

MDA must manage complexity, risk, and urgency when making decisions. In addition, the Instruction states that program managers are responsible for prioritizing and mitigating programmatic risks, detailing the risks in the acquisition strategy, and

(U) The MDA must manage complexity, risk, and urgency when making decisions . . . Program managers are responsible for prioritizing and mitigating . . . detailing . . . and presenting the risks.

presenting the risks at all relevant decision points and milestones. The risk management framework that various entities, including the DoD, use states that the risk management process should identify risks, assess the likelihood and impact of risks, and develop measures to mitigate the risks. The MDA will review the program office’s recommendation and the decision will be documented in an acquisition decision memorandum.

(U) MQ-25 Program Operational Capability Requirements

(U) Primary operational capability requirements, also referred to as key performance parameters, are system capabilities that must be met for a system to meet operational requirements set by the user. The Deputy Secretary of Defense designated the MQ-25 program as a Key Performance Parameter Reduction Pilot Program, which allows the Navy to focus on fewer primary operational capability requirements than the six that were required at program designation.⁵ Therefore, the MQ-25 program has only the following two primary operational capability requirements.

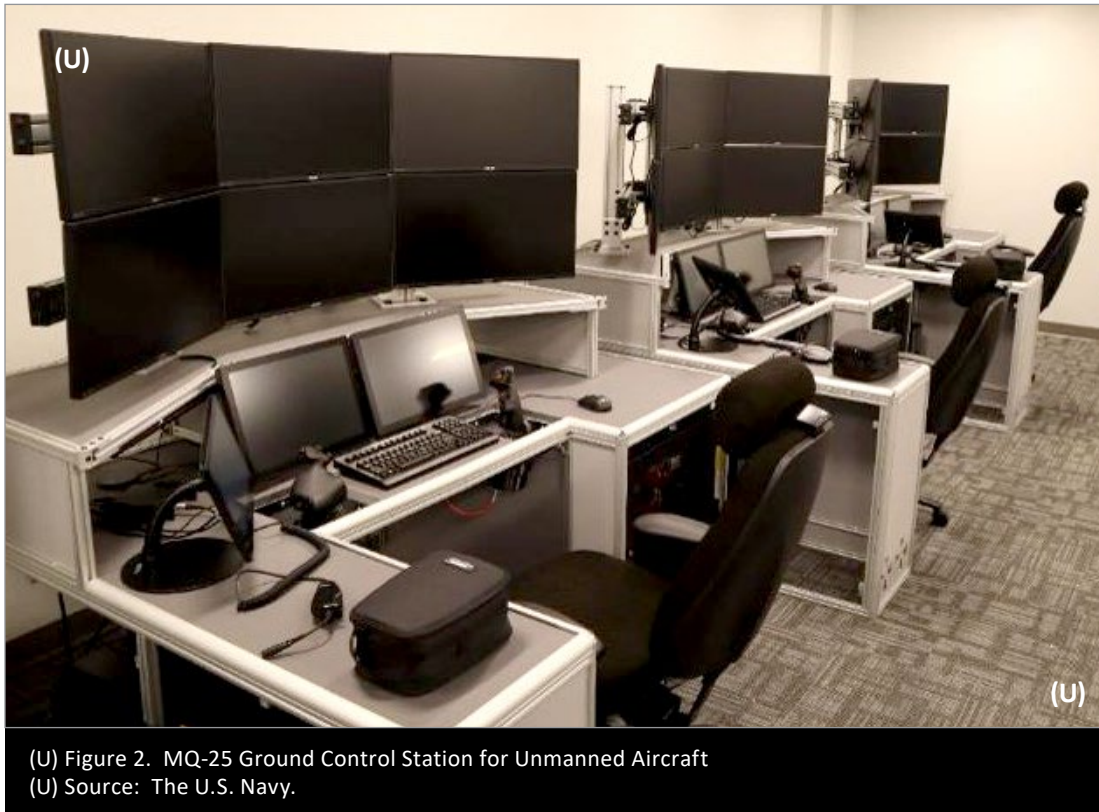
- (U) The MQ-25 program must be compatible with the Nimitz and Ford-class CVNs.
- ~~(CUI)~~ The MQ-25A must be able to give [REDACTED].

(U) MQ-25 Components

(U) Boeing is developing the MQ-25A and Lockheed Martin is developing the GCS. The Navy plans to acquire 76 MQ-25As, consisting of 7 production-representative air vehicles, 12 air vehicles delivered for LRIP, and 57 air vehicles delivered for FRP.

⁵ (U) The National Defense Authorization Act for Fiscal Year 2017, Section 854, allowed the Secretary of Defense to designate one program from each Military Service to have no more than three primary operational capability requirements instead of the six required by the Joint Capabilities Integration and Development Systems process.

(U) The UMCS will integrate with multiple Navy networks and systems, afloat and ashore, to provide control of all CVN-based unmanned aircraft. The GCS, a component of the UMCS, is the MQ-25A's command and control center. The GCS is designed to be integrated aboard Nimitz and Ford-class CVNs, where operators will be able to control the air vehicle and execute missions. Figure 2 shows the GCS located at the Program Office's System Test and Integration Lab on Naval Air Station Patuxent River, Maryland.



(U) MQ-25 Testing Strategy for the EMD Phase

(U) To develop the MQ-25A and the GCS, the Program Office has conducted testing using the T-1 test asset, modeling and simulation, the government-owned System Test and Integration Lab, and the Iron Bird.⁶ The tests were partially implemented during the EMD phase because the MQ-25A is not yet available to undergo testing.

- (U) T-1 Test Asset – A Boeing-owned air vehicle that shares similarities with the MQ-25A, such as the landing gear and engine. The Program Office has been using the T-1 test asset throughout the MQ-25A acquisition to obtain developmental feedback before the delivery of the first government-owned production-representative air vehicle.

⁶ (U) Modeling and simulation is the use of models, such as emulators, prototypes, simulators, and stimulators, over time to develop data as a basis for making technical decisions.

- (U) Modeling and Simulation – The Program Office uses modeling and simulation to provide areas of improvement for the MQ-25A. For example, program officials use computer modeling and simulations to help predict MQ-25A behaviors in the air and on the aircraft carrier. Boeing and Navy officials use this information to help the design team predict the impact of airframe changes for the production-representative air vehicles.
- (U) System Test and Integration Lab – The Program Office uses a government-owned lab on Naval Air Station Patuxent River, Maryland. The System Test and Integration Lab provides the program a platform to continually test the integration of the air vehicle and GCS. Specifically, the Program Office uses the lab to conduct hardware and software integration testing between the Boeing MQ-25A and the Lockheed Martin GCS.
- (U) Iron Bird – A non-flying test setup that physically test moving parts to ensure that all integrated parts work together. The Program Office describes the Iron Bird as a major test article for testing the hydraulic, flight control, and electrical power systems.

(U) According to the Program Office, the developmental strategy provided the Program Office with direct and early insight into the anticipated performance of the first production-representative air vehicle. As of August 2022, the Program Office estimated that it would receive its first production-representative MQ-25A in the first quarter of FY 2024. Figure 3 shows the T-1 test asset refueling an F/A-18 aircraft.



(U) Figure 3. T-1 Test Asset Refueling an F/A-18 Aircraft
(U) Source: The U.S. Navy.

(U) Finding

(U) Navy Officials Plan to Make Critical Production Decisions Before Conducting Sufficient Tests and Evaluations

(U) Navy officials, in coordination with the Unmanned Carrier Aviation Program Office (Program Office), plan to make critical production decisions before the Program Office conducts developmental and operational tests and evaluations that would verify the MQ-25 program will meet its operational capability requirements. Specifically:

- (U) the MDA plans to make the MS-C decision, which would allow the Program Office to sign the LRIP contract, before the Program Office performs sufficient DT&E using a production-representative MQ-25A; and
- (U) the Director of the Air Warfare Division plans to declare IOC, which would affirm the MQ-25A capable of conducting mission operations, before the Program Office performs sufficient IOT&E.

(U) Navy officials plan to make these decisions without the tests and evaluations because of what the Navy assesses to be the critical and urgent expected benefits of deploying the MQ-25A. Specifically, if the MQ-25 program operates as expected, it will provide critical support for the National Defense Strategy by extending the operating range of the CVNs' air wings and reducing the aerial refueling burden on F/A-18s, which will save costs and improve readiness. However, making critical production decisions without conducting sufficient testing introduces additional risk that the MQ-25 program will not meet its operational capability requirements, which could require costly and time-consuming engineering changes and may delay the MQ-25A's deployment. Therefore, Navy officials should either delay the MS-C and IOC decisions until the Program Office can conduct sufficient tests and evaluations or ensure the Program Office updates the MQ-25 program's risk management documentation to identify, assess, and develop measures to mitigate the impacts of not performing DT&E and IOT&E before the MS-C and IOC decisions, respectively.

(U) Navy Officials Plan to Make Critical Production Decisions Without Sufficient Tests and Evaluations

(U) Navy officials plan to make critical production decisions before the Program Office conducts the tests and evaluations that would verify whether the MQ-25 program will meet its operational capability requirements. Specifically:

- (U) the MDA plans to make the MS-C decision before the Program Office performs sufficient DT&E; and
- (U) the Director of the Air Warfare Division plans to declare IOC before the Program Office performs sufficient IOT&E.

(U) The MDA Plans to Make the MS-C Decision Before DT&E

(U) The MDA plans to make the MS-C decision that would allow the Program Office to sign the LRIP contract before the Program Office performs DT&E on a production-representative MQ-25A. In accordance with the major capability

(U) DT&E test results would help to ensure the Program Office produces an air vehicle that does not have limitations in meeting operational capability requirements.

acquisition model, the best practice is to conduct DT&E before the MS-C decision so that the MDA is informed of the test results when making the MS-C decision. DT&E test results would help to ensure the Program Office produces an air vehicle that does not have limitations in meeting operational capability

requirements, which could require costly and time-consuming engineering changes to meet requirements.

~~(U)~~ The 2018 MQ-25 Acquisition Strategy, which included the program's official schedule, indicated that DT&E would conclude before the MS-C decision. Specifically, the 2018 MQ-25 program schedule stated that DT&E would start with the delivery of the first production-representative air vehicle in the [REDACTED], before the MS-C decision in the [REDACTED]. The program schedule provided the Navy approximately [REDACTED] to conduct DT&E before and in support of the MS-C decision.

~~(U)~~ However, due to program delays, including a [REDACTED] delay in the delivery of the first production-representative air vehicle, the Program Office developed a new MQ-25 Acquisition Strategy in April 2022, with additional schedule updates in August 2022, to reflect the expected delivery of the first production-representative air vehicle in the [REDACTED]. However, rather than delaying the MS-C decision to allow for DT&E, the revised program

~~(CUI)~~ schedule moved the MS-C decision earlier by [REDACTED] to the [REDACTED], which was before the Program Office expected to receive any of the production-representative vehicles or conduct any DT&E. Therefore, according to the August 2022 schedule and a meeting with the Program Office in December 2022 that confirmed the schedule, the Program Office did not plan to conduct any DT&E before the MS-C decision. See Figure 4 for the changes made to the MS-C and DT&E schedules and Appendix B for a full illustration of the MQ-25 program’s schedule updates.

(U) The Program Office did not plan to conduct any DT&E before the MS-C decision.

(U) Figure 4. Changes to the MS-C and DT&E Schedules



(U) Note: The start of DT&E occurred with the delivery of the initial production-representative air vehicle. Source: The U.S. Navy.

(U) The Director of Air Warfare Plans to Declare IOC Before IOT&E

(U) The Director of the Air Warfare Division plans to declare IOC, which would affirm the MQ-25 program and the operational organization as capable of conducting mission operations, before the Program Office performs IOT&E. In accordance with the major capability acquisition model, the best practice is to conduct IOT&E before the IOC decision, because IOT&E test results show whether the MQ-25 program is operationally effective and suitable in the intended environment and meets user needs.

(U) IOT&E test results show whether the MQ-25 program is operationally effective and suitable in the intended environment and meets user needs.

~~(CUI)~~ The 2018 Acquisition Strategy schedule indicated that the Program Office planned to perform IOT&E in the [REDACTED], before the IOC declaration that was planned for the [REDACTED]. However, according to the August 2022 schedule, program officials moved the IOC decision up by over

(U) The Program Office does not plan to conduct any IOT&E before the Director of the Air Warfare Division declares IOC. [REDACTED] to the [REDACTED], despite IOT&E not being planned until after the IOC is declared at the end of the [REDACTED]. Therefore, the Program Office does not plan to conduct any IOT&E before the Director of the Air Warfare Division declares IOC. See Figure 5 for the changes made to the IOC and IOT&E schedules.

(U) Figure 5. Changes to the IOC and IOT&E Schedules



(U) Source: The U.S. Navy.

~~(CUI)~~ Navy officials defined the requirements for the IOC decision as a [REDACTED]. Further, when the Director of the Air Warfare Division declares IOC, they are affirming that the program is equipped, trained, and capable of conducting MQ-25A mission operations. Navy officials planned to use IOT&E to identify operational deficiencies, evaluate changes in production configuration, and determine whether the technical publications and support equipment are adequate in the operational environment. However, if IOT&E is conducted after the IOC declaration, the Director of the Air Warfare Division cannot rely on the IOT&E test results to help inform that decision.

(U) The Navy Has Determined That MQ-25 Critical Capabilities Are Urgently Required

(U) Navy officials plan to make the MS-C and IOC decisions before the Program Office conducts the tests and evaluations because of what the Navy assesses to be the critical and urgent benefits the MQ-25A is designed to provide when deployed.

~~(U)~~ To simplify the acquisition process and acquire weapons systems in an expedited manner, as directed by congressional reforms in 2016 and 2017, DoD Instruction 5000.85 provides the Services and program offices flexibility in their acquisition schedules. Therefore, despite the delays in receiving the first production-representative air vehicle, Navy officials are planning to use these flexibilities to make the MS-C and IOC decisions before conducting DT&E and IOT&E, respectively, because of the urgency to provide the CVN air wings with the expected MQ-25A capabilities. Specifically, if the MQ-25A operates as the Navy intends and can [REDACTED]

(U) Navy officials are planning to use these flexibilities . . . because of the urgency to provide the CVN air wings with the expected MQ-25A capabilities.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(U) In addition, as the first CVN-based unmanned air vehicle, the MQ-25A is a crucial step in the Navy meeting its goal of having 60 percent of its CVN air wings unmanned by 2040. Therefore, the Chief of Naval Operations stated that it was critically important to deploy the MQ-25A on CVNs as quickly as possible. Additionally, since the MQ-25A will take over the CVN-based aerial refueling mission from the F/A-18, the Navy expects the deployment of the MQ-25A to improve F/A-18 readiness and reduce F/A-18 maintenance costs.

(U) The MQ-25 Program Is at Increased Risk of Not Meeting Operational Capability Requirements

(U) As a result of Navy officials not performing DT&E before the MS-C decision and IOT&E before the IOC decision, there is an increased chance that the MQ-25 program will not meet its operational capability requirements. In addition, there is a risk that when DT&E and IOT&E do occur, after production has begun and

(U) after the Navy has declared IOC, respectively, the program will identify issues that are costly and delay the deployment of the MQ-25A to the CVNs. The Government Accountability Office (GAO) has highlighted these risks in a number of reports it has issued on DoD weapons programs.

(U) GAO Reports Have Highlighted Risks of Making Production Decisions Before Testing

(U) The GAO has highlighted the negative impacts of making production decisions before testing in a number of its weapon systems annual assessments, where it reviews multiple DoD weapon programs based on cost and acquisition

(U) Committing to production without testing a production-representative article increased the risk of identifying problems when testing did occur.

status. For example, the GAO's 2022 assessment stated that committing to production without testing a production-representative article increased the risk of identifying

problems when testing did occur that may require costly and time-intensive retrofits to the units already produced.⁷ Further, the GAO's 2017 assessment stated that programs proceeding to production before ensuring manufacturing processes were under control and developmental testing was complete may be at risk of increased cost and schedule delays.⁸

(U) The 2017 assessment also reported that programs declaring IOC before completing IOT&E risk finding deficiencies in testing that may need to be corrected, which could add to a program's cost and schedule post-production. The assessment highlighted the Navy's Littoral Combat Ship as an example of a program that had declared IOC before IOT&E. Nearly 5 years later, the GAO reported in February 2022 that the Littoral Combat Ship fleet was plagued by challenges during deployments and that operational testing found that it remained unable to demonstrate the operational capabilities it needs to perform its mission.⁹

(U) Programs declaring IOC before completing IOT&E risk finding deficiencies in testing that may need to be corrected.

⁷ (U) GAO-22-105230, "Weapon Systems Annual Assessment: Challenges to Fielding Capabilities Faster Persist," June 2022. A retrofit is a modification to an item in order to incorporate changes made in subsequent production items.

⁸ (U) GAO-17-333SP, "Defense Acquisitions: Assessments of Selected Weapon Programs," March 2017.

⁹ (U) GAO-22-105387, "Littoral Combat Ship: Actions Needed to Address Significant Operational Challenges and Implement Planned Sustainment Approach," February 2022.

(U) Testing During EMD Phase Does Not Fully Mitigate the Risks

(U) As highlighted in this report, the Program Office used various tests during the EMD phase to mitigate the risks of making production decisions before conducting sufficient testing. Specifically, the Program Office performed tests using the System Test and Integration Lab, T-1, Iron Bird, and modeling and simulation that should help to identify and resolve some of the potential problems with the first production-representative air vehicles.

~~(U)~~ However, the strategies used by the Program Office did not mitigate all of the risks related to making the MS-C and IOC decisions before performing DT&E and IOT&E, respectively. For example, the Program Office did not verify, validate, or accredit the modeling and simulation used to develop the MQ-25A.¹⁰ Therefore, the Program Office may not have full assurance that modeling and simulation results are mature enough to inform the MS-C or IOC decisions. [REDACTED]

[REDACTED]

(U) Consequently, despite conducting various tests during EMD, there is still a risk that DT&E or IOT&E will identify that the MQ-25A does not meet or has limitations in meeting its operational requirements, which would ultimately require the costly and time-consuming engineering changes referenced in the GAO’s reports.

(U) The Program Office Should Fully Address Risks Before Making the Next Production Decision

(U) The Program Office has not fully addressed all of the significant risks related to making the MS-C decision before conducting DT&E or declaring IOC before conducting IOT&E. DoD Instruction 5000.85 provides the Services and program offices flexibility in their acquisition schedules, but it also states that the MDA must manage complexity, risk, and urgency when making decisions. In addition, the Instruction states that program managers are responsible for prioritizing and mitigating programmatic risks, detailing the risks in the acquisition strategy, and presenting the risks at all relevant decision points and milestones.

¹⁰ (U) Verification and validation verifies the consistency and correctness of the data and validates that it represents real-world entities appropriate for its intended purpose or an expected range of purposes. Accreditation is the official certification that a model, simulation, or combination of models and simulations and its associated data are acceptable for use for a specific purpose.

(U) The Program Office has an established risk management process that includes identifying, assessing, and planning mitigation measures to help ensure the MQ-25 program is prepared for the identified risks and to help reduce the impact on the MQ-25 program if those risks were realized. However, the Program Office's risk documentation did not prioritize all of the significant risks related to making the MS-C decision before conducting DT&E on a production-representative air vehicle or declaring IOC before conducting IOT&E. For example, the MQ-25 program's risk documentation, including the risks contained in the acquisition strategy, did not identify, assess, or develop mitigation plans to address significant changes that may be identified during DT&E and IOT&E, or the risk that the Program Office will experience further delays in receiving the first production-representative air vehicle.

(U) Notice of Concern and MDA Response

(U) To ensure the MDA was informed of the risks of conducting DT&E after the MS-C decision that was scheduled in February 2023, we issued a notice of concern in January 2023.

(U) Notice of Concern Summary

(U) On January 26, 2023, we issued a notice of concern to the MDA detailing our concerns that there were risks in making the MS-C decision before DT&E. We issued the notice in January 2023 because we wanted to inform the MDA of our concerns before they made the MS-C decision, which was then scheduled to be completed by February 28, 2023. In the notice, we recognized the urgency of the program and that the MDA had flexibility in the schedule, but we also highlighted the risks of making the MS-C decision before DT&E and that the Program Office had not fully addressed these risks. Therefore, we suggested that the Program Office either:

- (U) delay the MS-C decision or the LRIP contract until the Program Office can conduct sufficient DT&E on a production-representative air vehicle and completes its modeling and simulation verification, validation, and accreditation reports, or
- (U) update the MQ-25 program's risk management documentation and plans to include the significant risks associated with making the MS-C decision and committing to production before conducting DT&E and accrediting its modeling and simulation program.

(U) If the MDA chose the second option, we suggested that the Program Office brief the MDA on the risks and potential impacts of making the MS-C decision before DT&E during the MS-C review. See Appendix C for the Notice of Concern that we issued to the MDA.

(U) MDA Response to the Notice of Concern

(U) In the MDA’s response to the notice of concern on February 24, 2023, the MDA affirmed the critical nature of the MQ-25 program and stated that the MQ-25 would provide capabilities to extend global reach and operational flexibility. The MDA also stated that the MQ-25 program was a critical step to the Navy meeting its goal of having 60 percent of its carrier air wings unmanned by 2040. Therefore, the MDA stated that, instead of delaying the MQ-25 program the Program Office would update its risk documentation to incorporate additional significant risks related to the MS-C decision. The response also stated that the Program Office would communicate significant risks to the MDA during regular engagements. See Appendix C for the MDA’s response to our Notice of Concern.

(U) Additional MQ-25 Program Updates

(~~CUI~~) In addition to the MDA’s response, Program Office officials have also provided a number of updates that impact the MQ-25 program. In March 2023, they provided an updated MQ-25 program acquisition schedule that showed the delivery of the first production-representative MQ-25A was delayed by up to [REDACTED] beyond the anticipated [REDACTED] delay. In addition, the new schedule showed the following updates.

- (~~CUI~~) The MS-C and LRIP decisions were delayed to [REDACTED], and DT&E will not begin until delivery of the first production-representative MQ-25A, which is now expected to occur in [REDACTED].
- (~~CUI~~) The IOC declaration was delayed until [REDACTED], and IOT&E was not expected to begin until after IOC has been declared.

(U) Figure 6 illustrates the MQ-25 program’s March 2023 schedule updates.

(U) Figure 6. MQ-25 Program Schedule, as of March 2023



(U) Source: The U.S. Navy.

(U) Furthermore, when providing the updated schedule, Program Office officials stated that recent discussions with Boeing led the Navy to expect additional schedule changes in the future.

(U) The Program Office Should Address Remaining Risks

(U) While we continue to recognize the Navy's urgency to deploy the MQ-25A's capabilities to its CVN fleet and that DoD acquisition officials are provided flexibility in their decision-making, the latest updates to the MQ-25 program schedule show that there are still risks that the Program Office has not addressed. Specifically, Navy officials are still planning to make the MS-C decision before conducting sufficient DT&E on a production-representative MQ-25A and are planning on declaring IOC before conducting sufficient IOT&E. Therefore, we recommend that the Navy either:

- (U) delay critical decisions until the Program Office conducts sufficient testing to support the decisions. This would include:
 - (U) the MDA reconsidering their position from the Notice of Concern and delaying the MS-C decision or the LRIP contract until the Program Office could conduct sufficient DT&E on a production-representative air vehicle and complete its modeling and simulation verification, validation, and accreditation reports, and
 - (U) the Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, delaying the IOC declaration until the Program Office can conduct sufficient IOT&E, or
- (U) update the MQ-25 program's risk management documentation and plans to include the significant risks associated with making these decisions prior to conducting sufficient tests and evaluations. The updates should identify all of the risks associated with making the decisions before conducting sufficient tests and evaluations, assess the likelihood and potential impacts should it occur, and include the applicable measures the Program Office would use to mitigate the potential impacts to mission, costs, and schedule.

(U) In addition, the latest updates and schedule delays affirm the risk that the Program Office may continue to experience unanticipated delays in receiving the air vehicles it purchases. Consequently, there is a realistic chance that these delays will continue and may ultimately lead to the MQ-25 program not meeting its scheduled deployment dates, which would force the CVN air wing to continue to rely on the F/A 18's capabilities for longer than expected. Therefore, the Program Office should also update the MQ-25 program risk documentation to account for the risk that it may continue to experience delays in receiving MQ-25As, which could delay the MQ-25A's scheduled deployment dates.

(U) Recommendations, Management Comments, and Our Response

(U) Recommendation 1

(U) We recommend that the Assistant Secretary of the Navy for Research, Development, and Acquisition, either:

- **(U)** delay the Milestone C decision or the Low Rate Initial Production contract until the Unmanned Carrier Aviation Program Office conducts sufficient developmental test and evaluation on a production-representative air vehicle and completes its modeling and simulation verification, validation, and accreditation reports, or
- **(U)** ensure the Program Office updates the MQ-25 program's risk management documentation to identify all of the risks associated with making the Milestone C decision before conducting developmental test and evaluation, assess the likelihood and potential impacts should the risks occur, and include the applicable measures the Program Office would use to mitigate the potential impacts to mission, costs, and schedule.

(U) Recommendation 2

(U) We recommend that the Assistant Secretary of the Navy for Research, Development, and Acquisition ensure the Unmanned Carrier Aviation Program Office updates the MQ-25 program's risk management documentation to identify all of the risks associated with experiencing further delays in receiving the MQ-25As, including the risk that the MQ-25 program misses the expected deployment dates. The updates should also assess the likelihood and potential impacts should the risks occur, as well as the applicable measures the Program Office would use to mitigate the potential impacts to mission, costs, and schedule.

(U) Recommendation 3

(U) We recommend that the Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, either:

- **(U)** delay the initial operational capability decision until the Unmanned Carrier Aviation Program Office conducts sufficient initial operational test and evaluation, or
- **(U)** ensure the Program Office updates the MQ-25 program's risk management documentation to identify all of the risks associated with declaring initial operational capability before conducting initial operational test and evaluation, assess the likelihood and potential impacts should the risks occur, and include the applicable measures the Program Office would use to mitigate the potential impacts to mission, costs, and schedule.

(U) Joint Navy Comments

(U) The Acting Assistant Secretary of the Navy for Research, Development, and Acquisition, and the Director of the Air Warfare Division, N98, Office of the Chief of Naval Operations, provided joint comments to Recommendations 1, 2, and 3. In the comments, the Acting Assistant Secretary of the Navy for Research, Development, and Acquisition, and the Director of the Air Warfare Division reiterated the critical importance of the MQ-25 program and stated that the finding in the report was important to the teams working to field the MQ-25 capability as quickly as possible. They stated that in line with the Notice of Concern issued in January 2023 and their February 2023 response, they have updated risk management documentation and increased regular risk assessments to the Program Executive Office and the Office of the Assistant Secretary of the Navy for Research, Development, and Acquisitions. As a result of these efforts and other events this past spring, the Navy adjusted its plan for the development, test, and production of the MQ-25 toward a more traditional acquisition strategy. Therefore, the Navy is no longer proposing MS-C and the LRIP contract award this year, and the Navy will ensure these best practices will continue to be followed in the future. The Navy has developed an updated draft Acquisition Strategy that reflects the revised schedule and will implement the updated Acquisition Strategy once the Navy confirms that the required resources and authorities are provided to the Department of the Navy in the FY 2024 Appropriation Act. See Management Comments for the Navy's comments on our finding and recommendations.

(U) Our Response

(U) Comments from the Acting Assistant Secretary of the Navy and Director partially addressed the recommendations; therefore, the recommendations are unresolved. However, we commend the Navy for the actions it has taken in response to the Notice of Concern that we issued in January 2023 (see Appendix C). We are encouraged that the Navy has adopted a more traditional acquisition strategy, delayed the MS-C decision and the LRIP contract, and is continuously assessing and communicating programmatic risks.

(U) Although the Navy delayed the MS-C decision and the LRIP contract, the Acting Assistant Secretary of the Navy and Director did not state whether the delays would allow the Program Office to conduct sufficient DT&E before these decision points, or whether the Program Office would update the risk documentation to address the associated risks. Additionally, they did not state whether the updated schedule would allow the Program Office to conduct sufficient IOT&E before the Navy declared that the MQ-25 reached IOC, or whether the Program Office would update its risk documentation to address the risks associated with this decision.

(U) Furthermore, although they affirmed that the Navy was continuously assessing the MQ-25 program's risks, they did not specify that the Program Office had updated or will update the MQ-25 program's risk management documentation to identify all of the risks associated with experiencing further delays in receiving the MQ-25As.

(U) To resolve Recommendations 1 and 3, we request that the Navy clarify whether the MQ-25 program's updated Acquisition Strategy and schedule plan to delay the MS-C and IOC decisions until the Program Office conducts the applicable testing, or confirm that the Program Office will provide updated MQ-25 program risk management documentation that addresses the respective risks.

(U) To resolve Recommendation 2, we request that the Navy confirm that the Program Office will provide updated risk management documentation regarding the MQ-25A delays that would include identifying all the risks associated with experiencing further delays in receiving the MQ-25As and the risk that the MQ-25 program misses the expected deployment dates.

(U) We request that the Navy provide additional comments that clarify its current plans to address the unresolved recommendations within 30 days of the final report. We understand that the Navy's current plans are dependent on receiving the required resources and authorities in the FY 2024 Appropriation Act, which had not yet been enacted as of November 9, 2023. Therefore, if the FY 2024 Appropriation Act, when enacted, changes how the Navy will address our recommendations, we can coordinate in the future to determine appropriate actions to address the recommendations.

(U) Appendix A

(U) Scope and Methodology

(U) We conducted this performance audit from March 2022 through May 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

(U) Review of Documentation and Interviews

(U) To answer our audit objective, we reviewed MQ-25 program documentation, including the Acquisition Program Baseline, the 2018 and 2022 Acquisition Strategies, MQ-25 program schedule updates, the 2020 Test and Evaluation Master Plan supporting Milestone B, and the Draft Test and Evaluation Master Plan to support Milestone C.

(U) We reviewed the following guidance.

- (U) DoD Instruction 5000.85, “Major Capability Acquisition,” November 4, 2021
- (U) DoD Instruction 5000.89, “Test and Evaluation,” November 19, 2020
- (U) Office of the Director, “Operational Test and Evaluation, Test and Evaluation Enterprise Guidebook,” August 2022
- (U) Office of the Deputy Director for Engineering, “Engineering of Defense Systems Guidebook,” February 2022
- (U) Office of the Deputy Director for Engineering, “Systems Engineering Guidebook,” February 2022

(U) We conducted a site visit to the Unmanned Carrier Aviation Program Office (Program Office) at Naval Air Systems Command, Patuxent River, Maryland. We met and interviewed MQ-25 program management officials to understand the MQ-25 program, risk areas, and risk mitigation strategies. We also interviewed officials from the following Navy organizations.

- (U) Office of the Assistant Secretary of the Navy (Research, Development, and Acquisition)
- (U) Office of the Director, Operational Test and Evaluation
- (U) Office of the Chief of Naval Operations, Director of Air Warfare
- (U) Office for the Chief of Naval Research, Director, Innovation, Technology Requirements, and Test and Evaluation
- (U) Operational Test and Evaluation Force

(U) Internal Control Assessment and Compliance

(U) We assessed internal controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed control activities related to the Navy's management of the MQ-25 program to meet operational capability requirements. We identified an internal control weakness where MQ-25 program officials did not properly identify, assess, or develop mitigation measures for significant risks that were caused by moving the program forward in the acquisition process without testing that would inform the critical milestone decisions. However, because our review was limited to those internal control components and underlying principles, it may not have disclosed all internal control deficiencies that may have existed at the time of this audit.

(U) Use of Computer-Processed Data

(U) We did not use computer-processed data to perform this audit.

(U) Use of Technical Assistance

(U) We used technical assistance from engineers in the Research and Engineering Division of the DoD OIG's Evaluations component to perform this audit. The engineers determined the extent to which certain activities, such as modeling and simulation, the use of test articles, the Iron Bird, the System Test and Integration Laboratory, and the Boeing T-1 prototype were risk reduction actions for the MQ-25 program.

(U) Prior Coverage

(U) During the last 5 years, the GAO issued three reports discussing DoD acquisitions and testing. Unrestricted GAO reports can be accessed at <http://www.gao.gov>.

(U) GAO

(U) Report No. GAO-22-105230, "Weapon Systems Annual Assessment, Challenges to Fielding Capabilities Faster Persist," June 2022

(U) The GAO analyzed 63 of the DoD's costliest weapon system acquisition programs, and the GAO found that Major Defense Acquisition Programs continue to struggle with schedule delays. The GAO further noted that the majority of Major Defense Acquisition Programs that it reviewed continue to not fully achieve knowledge that informs key investment decisions. For example, in one Air Force program, the GAO found that the program entered production

(U) before testing a production-representative prototype in its intended environment, which increased the risk of finding issues in testing that may require costly and time-intensive future rework on units already produced.

(U) Report No. GAO-22-105387, "Littoral Combat Ship: Actions Needed to Address Significant Operational Challenges and Implement Planned Sustainment Approach," February 2022

(U) The GAO examined the extent to which the Navy has demonstrated that the Littoral Combat Ship had the operational and warfighting capabilities to perform its mission. The GAO found that the Littoral Combat Ship fleet has not demonstrated the operational capabilities it needs to perform its mission. Operational testing has found several significant challenges, and the Navy was behind schedule in developing various mission modules for the Littoral Combat Ship. Additionally, the GAO found that the Littoral Combat Ship frequently encountered challenges during deployments. The Navy has begun to take steps to address some of these issues, but it did not have a comprehensive plan to address the various deficiencies identified during testing and deployments.

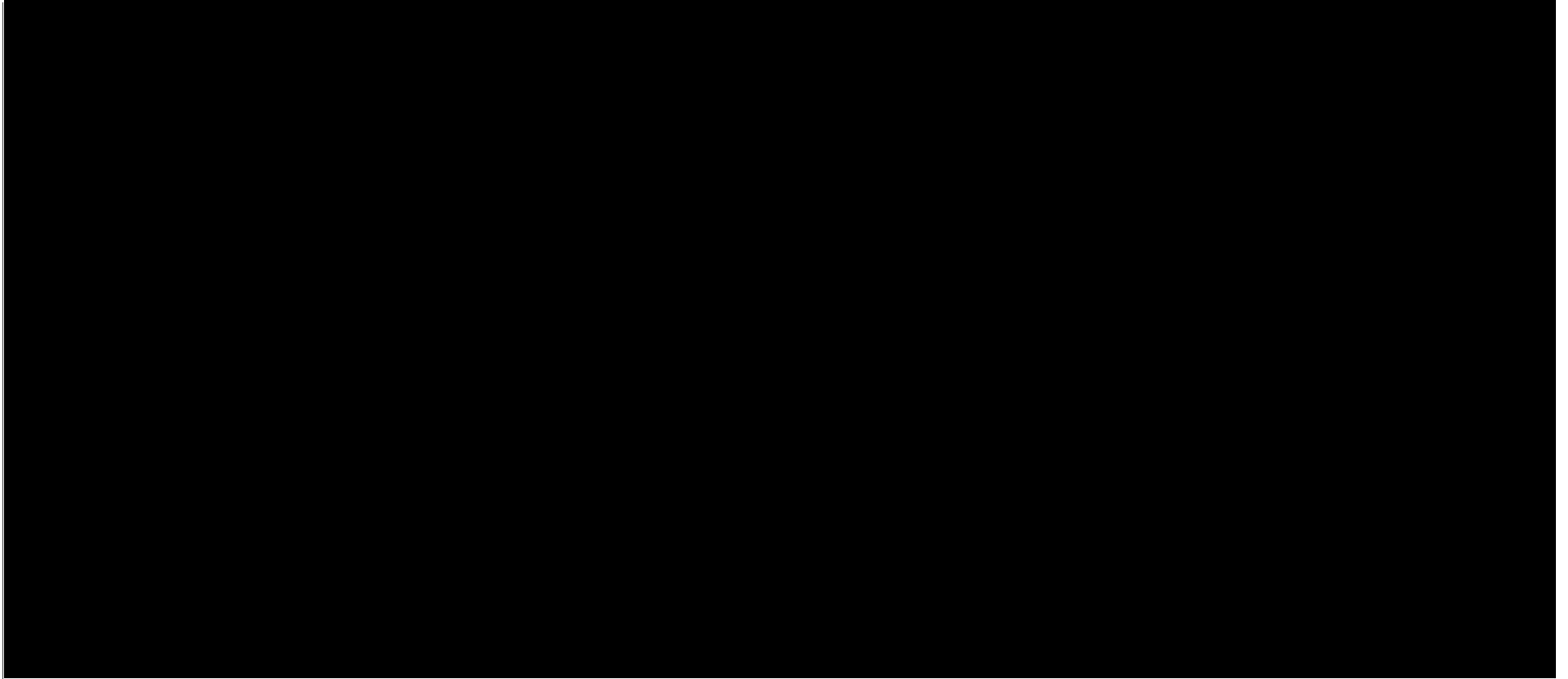
(U) Report No. GAO-18-541SU, "The Navy Has Reduced MQ-25 Development Risk, but Should Improve Its Cost Estimate," August 2018

(U) [REDACTED]

(U) Appendix B

(U) MQ-25 Stingray Acquisition Program Schedules

(CUI)

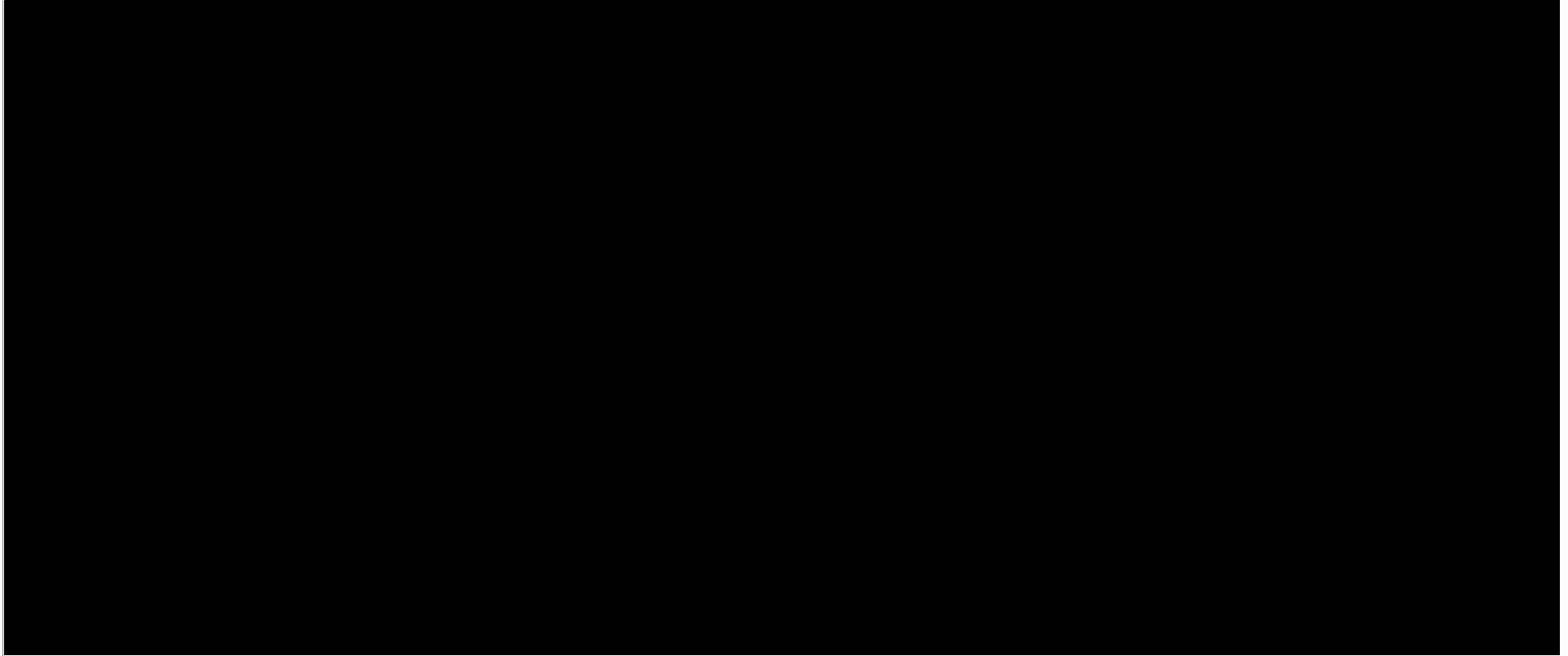


(CUI)

(U) Source: The U.S. Navy.

(U) MQ-25 Stingray Acquisition Program Schedules (cont'd)

~~(CUI)~~



~~(CUI)~~

(U) Source: The U.S. Navy.

(U) Appendix C

(U) Notice of Concern and Management Response

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INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

January 26, 2023

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH,
DEVELOPMENT, AND ACQUISITION

SUBJECT: (U) MQ-25 Stingray Program Milestone C Decision
(Project No. D2022-D000AU-0118.000)

(U) We are issuing this memorandum to notify you of concerns identified during our audit of the Development and Testing for the MQ-25 Stingray (MQ-25). The audit is ongoing and being conducted in accordance with generally accepted government auditing standards. The objective of the audit is to determine whether Navy officials are effectively managing the MQ-25 program to meet operational capability requirements. The work conducted on the audit is preliminary, and there is additional work ongoing to satisfy the audit objective. We are providing this memorandum for your comments and action before the completion of the audit to ensure timely action regarding the identified concerns. Please respond to the suggested action in this memorandum or provide actions taken within 14 calendar days of the issuance of this memorandum. This memorandum and your comments on the suggested action will be included in the final report.

(U) During the audit, we identified that the Milestone Decision Authority (MDA) plans to make the Milestone C (MS-C) decision before the MQ-25 Program Office performs Developmental Testing and Evaluation (DT&E) on a production-representative MQ-25A air vehicle.¹ Making the MS-C decision before DT&E could result in increased costs and delay the MQ-25 schedule, because the MS-C approval would allow the MQ-25 Program Office to sign the Low Rate Initial Production (LRIP) contract.

(U) Milestone C Decision

(U) The MQ-25 program, a major capability acquisition, is an unmanned aerial refueling air vehicle designed to be the Navy's first dedicated aerial refueler since 2016 and the Navy's first nuclear aircraft carrier (CVN)-based unmanned air vehicle. The DoD Major Capability Acquisition Model has three milestone (MS) decisions (MS-A, MS-B, and MS-C). At each of these MS decisions, DoD Instruction 5000.85

Controlled by: DoD OIG
Controlled by: Audit, Acquisition, Contracting, and Sustainment
CUI Category: PRVCY
Limited Dissemination Control: FEDCON
POC: Assistant Inspector General for Audit/Cyberspace Operations & Acquisition, Contracting, and Sustainment, [REDACTED]

¹ (U) A production-representative article is a system that accurately represents the production configuration system for both hardware and software, but is not produced on a final production line.

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(U) Notice of Concern and Management Response (cont'd)

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requires the MDA to determine whether the acquisition program is authorized to enter into the next major acquisition phase.² In addition, DoD Instruction 5000.85 states that the program office should typically conduct DT&E during the Engineering and Manufacturing phase. DT&E provides the program office feedback on the progress of the design process and on the product's compliance with contractual requirements, effective combat capability, and the ability to achieve its operational capability requirements. Conducting DT&E in the Engineering and Manufacturing Development phase is critical because the MS-C decision, which approves the program to enter the Production and Deployment phase, also authorizes the program office to award the LRIP contract.³

(U) The MQ-25 Program Office Does Not Plan to Conduct DT&E Before the MS-C Decision

~~(CUI)~~ ~~(U)~~ The 2018 MQ-25 Acquisition Strategy indicated that a sufficient amount of DT&E would be performed before the MS-C decision. Specifically, the 2018 MQ-25 Acquisition Strategy program schedule stated that DT&E would start with the delivery of the first production-representative air vehicle in the [REDACTED], before the MS-C decision in the [REDACTED]. The program schedule provided the Navy approximately [REDACTED] to conduct DT&E before and in support of the MS-C decision. However, due to program delays, including a [REDACTED] delay in the delivery of the first production-representative air vehicle, the MQ-25 Program Office revised the program schedule in April 2022 to reflect the expected delivery of the first production-representative air vehicle in the [REDACTED]. Rather than delaying the MS-C decision to allow for DT&E, the revised program schedule also moved the MS-C decision earlier by about [REDACTED] to the [REDACTED]. In August 2022, the MQ-25 Program Office updated the program schedule again and moved the MS-C decision sooner to the [REDACTED], which is before the Program Office expects to receive any of the production-representative air vehicles or conduct DT&E. Therefore, according to the latest schedule and a meeting with the Program Office in December 2022 that confirmed the schedule, the Program Office does not plan to conduct any DT&E before the MS-C decision.

(U) If the MDA approves the MS-C decision, the MQ-25 program moves into the Production and Deployment phase. Because the MQ-25 Program Office plans to award the LRIP contract shortly after entering the Production and Deployment phase, the MDA and the Program Office plan to commit to the production of the MQ-25 without DT&E results, which would inform them whether the MQ-25 can meet its operational capability requirements.

(U) Urgency of Expected MQ-25 Capabilities

~~(CUI)~~ ~~(U)~~ The MQ-25 Program Office is planning for the MDA to make the MS-C decision before conducting DT&E because of the urgency to provide the CVN air wing with the expected

² (U) DoD Instruction 5000.85, "Major Capability Acquisition," August 6, 2020 (Incorporating Change 1, November 4, 2021).

³ (U) Awarding the LRIP contract commits funds to the initial production of the system. Specifically, the DoD uses LRIP contracts to procure production or production-representative articles for Initial Operational Test and Evaluation, establish an initial production base for the system, and permit an orderly increase in the production rate for the system, sufficient to lead to Full-Rate Production upon successful completion of operational testing.

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(U) Notice of Concern and Management Response (cont'd)

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~~(CUI)~~ MQ-25 capabilities. Specifically, if the MQ-25 operates as the Navy intends, [REDACTED].
 [REDACTED]. In addition, as the first CVN-based unmanned air vehicle, the MQ-25 is a crucial step in the Navy meeting its future goal of having 60 percent of its CVN air wings unmanned by 2040. Therefore, the Chief of Naval Operations has stated that it is critically important to deploy the MQ-25 on CVNs as quickly as possible. Additionally, since the MQ-25 will take over the CVN-based aerial refueling mission from the F/A-18, the Navy expects the deployment of the MQ-25 to improve F/A-18 readiness and reduce F/A-18 maintenance costs.

(U) MQ-25 Program Office Strategies for Developing the MQ-25 Should Minimize Needed Changes

(U) To minimize the number of engineering changes needed as a result of DT&E, the MQ-25 Program Office has conducted testing using the T-1 test asset, modeling and simulation, and leveraging the government-owned System Test and Integration Lab at Naval Air Station Patuxent River, Maryland, while designing and developing the MQ-25.⁴ Testing with the T-1, a Boeing air vehicle that shares similarities with the MQ-25A air vehicle such as the landing gear and engine, coupled with the employment of digital modeling and simulation, has been conducted with the intent of providing the MQ-25 Program Office with early insight into the anticipated performance of the first production-representative air vehicle. In addition, the Program Office has used the System Test and Integration Lab to test the communications equipment and the integration of the air vehicle and the ground control station system that will be used on the CVN.

~~(CUI)~~ ~~(U)~~ However, the strategies do not mitigate all of the risks related to making the MS-C decision before conducting DT&E on a production-representative air vehicle. Specifically, the MQ-25 Program Office has not verified, validated, and accredited the modeling and simulation used to develop the MQ-25.⁵ Therefore, the MQ-25 Program Office may not have full assurance that modeling and simulation results are mature enough to inform the MS-C decision. [REDACTED]
 [REDACTED].

(U) The MQ-25 Program Office Did Not Address Risks of Deciding on MS-C Before DT&E

(U) The MQ-25 Program Office has an established risk management process but did not address all significant risks. DoD Instruction 5000.85 provides the MDA and Program Offices flexibility in their acquisition schedules, but states that the MDA must manage complexity, risk, and

⁴ (U) Modeling and simulation is the use of models, such as emulators, prototypes, simulators, and stimulators, over time to develop data as a basis for making technical decisions.

(U) The System Test and Integration Lab is a government-owned lab at Naval Air Station Patuxent River, Maryland. The MQ-25 Program Office uses the System Test and Integration Lab to conduct hardware and software integration testing between the air vehicle and the ground control station.

⁵ (U) Verification and validation verifies the consistency and correctness of the data and validates that it represents real-world entities appropriate for its intended purpose or an expected range of purposes. Accreditation is the official certification that a model, simulation, or combination of models and simulations and its associated data are acceptable for use for a specific purpose.

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(U) Notice of Concern and Management Response (cont'd)

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urgency when making decisions. In addition, the Instruction states that Program Managers are responsible for prioritizing and mitigating programmatic risks, detailing the risks in the acquisition strategy, and presenting the risks at all relevant decision points and milestones. While we recognize the urgency to deploy the MQ-25 capabilities, there are significant risks in making the MS-C decision and committing to the LRIP contract before conducting DT&E on a production-representative air vehicle.

(U) The MQ-25 Program Office's risk management process includes identifying, assessing, and planning mitigation measures for the risks to help ensure the MQ-25 program is prepared for the identified risks, which would reduce the impact on the MQ-25 program if those risks are realized. However, the Program Office's risk documentation did not identify all of the significant risks related to making the MS-C decision before conducting DT&E on a production-representative air vehicle. Therefore, there are risks that are significant to the program that have not been properly assessed and mitigated. For example, the MQ-25 risk documentation did not identify, assess, and develop mitigation plans for the risks identified in this memorandum or the risk that the MQ-25 Program Office will experience further delays in receiving the first production-representative air vehicle.

(U) Until the MQ-25 Program Office prioritizes and addresses the remaining risks, there is an increased chance that the MQ-25 program will not meet operational capability requirements. There is also a risk that when DT&E does occur, after production has begun, the program will identify issues that are costly and delay the deployment of the MQ-25 to the CVNs. The Government Accountability Office has highlighted these potential issues in a number of its Weapon Systems Annual Assessments, where it reviews multiple DoD weapon programs based on cost and acquisition status. For example, the Government Accountability Office's 2022 Weapon Systems Annual Assessment states that committing to production without testing a production-representative prototype increases the risk of identifying problems during testing that may require costly and time-intensive retrofits to the units already produced.⁶ Further, the Government Accountability Office's 2017 Weapon System Annual Assessment states that proceeding into production before ensuring manufacturing processes are under control and developmental testing is complete may result in required retooling of production facilities.⁷

(U) Suggested Action

(U) To help address these concerns, we suggest that the MQ-25 Program Office either:

- (U) delays the Milestone C decision or the Low Rate Initial Production contract until the Program Office conducts sufficient Developmental Test and Evaluation on a production-representative air vehicle and completes its modeling and simulation verification, validation, and accreditation reports, or
- (U) updates the MQ-25 risk management documentation and plans to include the significant risks associated with making the Milestone C decision and committing to

⁶ (U) U.S. Government Accountability Office, "Weapon Systems Annual Assessment," June 2022.

⁷ (U) U.S. Government Accountability Office, "Defense Acquisitions, Assessments of Selected Weapon Programs," March 2017.

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4

(U) Notice of Concern and Management Response (cont'd)

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production before conducting Developmental Test and Evaluation and accrediting its modeling and simulation program.

(U) If the latter course is chosen, the MQ-25 Program Office should brief the Milestone Decision Authority on the risks and potential impacts of making the Milestone C decision before Developmental Test and Evaluation during the Milestone C review.

(~~CUI~~) If you have any questions, please contact [REDACTED]

Carol N. Gorman
Carol N. Gorman

Assistant Inspector General for Audit
Cyberspace Operations & Acquisition,
Contracting, and Sustainment

CUI

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(U) Notice of Concern and Management Response (cont'd)



~~CUI~~

THE ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT, AND ACQUISITION)
1000 NAVY PENTAGON
WASHINGTON, DC 20350-1000

FEB 24 2023

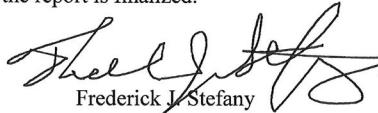
MEMORANDUM FOR INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE

SUBJECT: NOTICE OF CONCERN MEMORANDUM, "MQ-25 Stingray Program Milestone C Decision," (Project No. D2022-D000AU-0118.000)

Thank you for the opportunity to respond to the subject memorandum regarding your concerns relative to the MQ-25 Stingray program. The findings from your Notice of Concern are important to the teams who are working to field this critical capability as quickly as possible, because as you stated, the MQ-25 will provide a critical aerial refueling capability to the Carrier Air Wing and Carrier Strike Group that will extend global reach and operational flexibility, and is a critical step to the Navy meeting its goal of having 60 percent of its carrier air wings unmanned by 2040.

In accordance with the recommendation in the Notice of Concern, the program is following a documented risk process to update MQ-25 risk management documentation to align the child risks mentioned above into a parent risk related to the timing of the MS C decision. This parent risk will be communicated to me, as the program's Milestone Decision Authority (MDA), during regular engagements.

Once again, we appreciate the opportunity to respond to the DoDIG memorandum and will continue to address concerns as the report is finalized.


Frederick J. Stefany
Acting

~~CUI~~

(U) Management Comments

(U) Assistant Secretary of the Navy (Research, Development, and Acquisition) and Director, Air Warfare Division, Office of the Chief of Naval Operations



DEPARTMENT OF THE NAVY
OFFICE OF THE ASSISTANT SECRETARY OF THE NAVY
(RESEARCH, DEVELOPMENT AND ACQUISITION)
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
1000 NAVY PENTAGON
WASHINGTON, DC 20350-1000

MEMORANDUM FOR INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE

FROM: Assistant Secretary of the Navy (Research, Development and Acquisition)
Director, Air Warfare Division, N98, Office of the Chief of Naval Operations

SUBJECT: Response to report, "Audit of the Navy's Management of the MQ-25 Stingray Program" (Project No. D2022-D000AU-0118.000)

Thank you for the opportunity to respond to the subject report regarding your concerns relative to the MQ-25 Stingray program. The MQ-25 will provide a critical aerial refueling capability to the Carrier Air Wing, extend the Carrier Strike Group's global reach, increase operational flexibility, and lead the way to achieving the Navy's goal of a 60 percent unmanned Carrier Air Wing by 2040. The findings in your report are important to the teams who are working to field this critical capability as quickly as possible.

In line with your notice in January 2023 and our February 2023 response, we updated risk management documentation and increased regular risk assessments to the PEO and RDA. As a result of these efforts, and other events this spring, the Navy is adjusting the current plan for the development, test and production of the MQ-25 toward a more traditional acquisition strategy. MS C and LRIP contract award are no longer being proposed for this year, and the Navy will ensure these best practices will continue to be adhered to in the future. The current draft Acquisition Strategy reflecting the revised schedule will be implemented once we confirm that the required resources and authorities are provided to the DON in the FY 24 Appropriation Act. We will keep you informed on the revised Acquisition Strategy as it progresses.

Once again, we appreciate the opportunity to respond to the DoDIG report.

Michael P. Donnelly
Rear Admiral, U.S. Navy
Director, Air Warfare Division
(OPNAV N98)

Frederick J. Stefany
Assistant Secretary of the Navy
(Research, Development and Acquisition)
Acting

(U) Acronyms and Abbreviations

(U) CVN	Aircraft Carrier (Nuclear Propulsion)
(U) DT&E	Developmental Test and Evaluation
(U) EMD	Engineering and Manufacturing Development
(U) FRP	Full Rate Production
(U) GAO	Government Accountability Office
(U) GCS	Ground Control Station
(U) IOC	Initial Operational Capability
(U) IOT&E	Initial Operational Test and Evaluation
(U) LRIP	Low Rate Initial Production
(U) MDA	Milestone Decision Authority
(U) MQ-25	MQ-25 Stingray Acquisition Program
(U) MQ-25A	MQ-25 Stingray Air Vehicle
(U) MS	Milestone
(U) P&D	Production & Development
(U) Program Office	Unmanned Carrier Aviation Program Office
(U) UMCS	Unmanned Mission Control System

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