Report No. DODIG-2019-047

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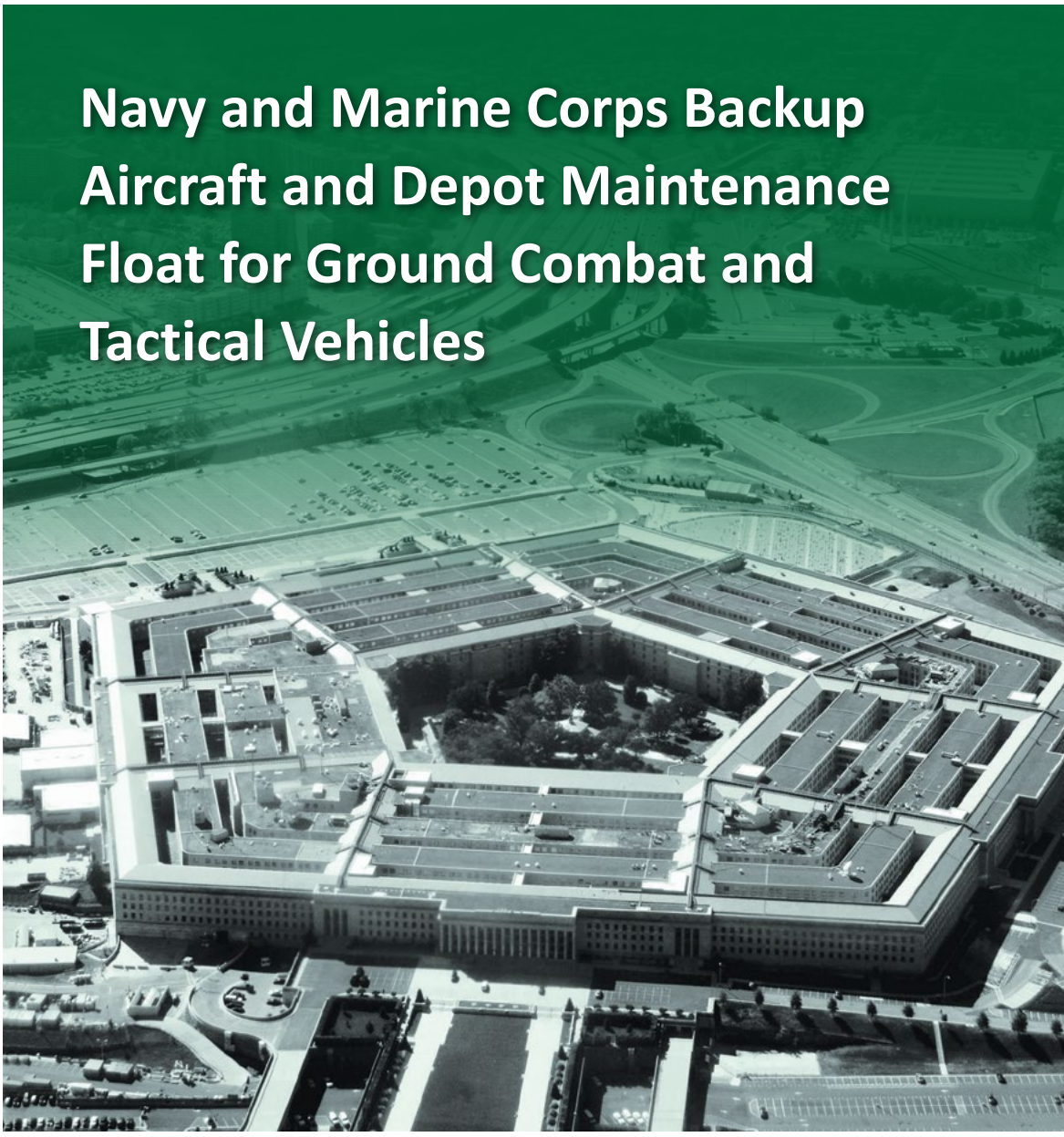
INSPECTOR GENERAL

U.S. Department of Defense

JANUARY 18, 2019

Navy and Marine Corps Backup Aircraft and Depot Maintenance Float for Ground Combat and Tactical Vehicles



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Results in Brief

Navy and Marine Corps Backup Aircraft and Depot Maintenance Float for Ground Combat and Tactical Vehicles

January 18, 2019

Objective

We determined whether the quantities of backup aircraft and depot maintenance float allowance (DMFA) for ground combat and tactical vehicles would impact Navy and Marine Corps unit readiness.

Background

The Navy and Marine Corps provide operational units with replacement aircraft or vehicles, known as backup aircraft and DMFA, to maintain readiness levels when a unit's aircraft or vehicle undergo depot maintenance, modification, or repair. We reviewed the backup aircraft for the F/A-18 aircraft, T-45 aircraft, and MH-60 helicopter and the DMFA for the Assault Amphibious Vehicle, Light Armored Vehicle, and Mine Resistant Ambush Protected vehicle. The on-hand quantity of backup aircraft and depot maintenance float vehicles can change daily due to fluctuations in depot workload.

Findings

The Navy and Marine Corps did not have a sufficient quantity of operational F/A-18 and T-45 aircraft available to replace all aircraft requiring depot maintenance. Specifically, 245 F/A-18 and 22 T-45 backup aircraft were in a non-operational status. The insufficient quantity of available backup aircraft occurred because the squadrons and training wings used the backup inventory to transition squadrons to newer models and replace training aircraft that were damaged to the extent that repair was uneconomical or impractical. The Navy and Marine Corps

Findings (cont'd)

also extended the service life of the F/A-18 and T-45 aircraft. Although pilots were receiving the required amount of training before a deployment, a Navy official stated it was a problem because pilots were barely meeting the minimum requirement. In addition, the Navy and Marine Corps could experience a future shortfall of trained pilots, potentially impacting mission readiness if aircraft shortages continue.

In addition, the Navy had more MH-60R and MH-60S helicopters than it required to maintain readiness. This occurred because the Office of the Chief of Naval Operations for Warfare Systems did not require communication between its divisions regarding changes that would impact a dependent weapon system. Specifically, the Office of the Chief of Naval Operations, Director of Air Warfare, did not receive notification of the Littoral Combat Ship's quantity changes and schedule delays. The MH-60R and MH-60S helicopters would deploy on the Littoral Combat Ship. As a result, the Navy spent $1.4 billion to procure 57 helicopters that were in storage and will spend more than $2 million annually to store these helicopters until at least 2020 when additional Littoral Combat Ships are delivered.

Finally, the Marine Corps had sufficient quantities of depot maintenance float vehicles on-hand for the Assault Amphibious Vehicle, Light Armored Vehicle, and Mine Resistant Ambush Protected vehicle to maintain unit readiness. However, the Marine Corps could not justify all DMFA authorizations. This occurred because Installations and Logistics officials did not perform the annual DMFA review and approve all DMFA authorization changes. As a result, the Marine Corps may unnecessarily spend funds on depot maintenance float vehicles that are not needed and other vehicles may have the incorrect DMFA quantity needed to maintain unit readiness.

Recommendations

We recommend that the Chief of Naval Operations, Director of Air Warfare, coordinate with the Naval Air Forces Commander and the Naval Air Training Chief to develop a plan to maintain a sufficient quantity of operational aircraft to allow training

Results in Brief

Navy and Marine Corps Backup Aircraft and Depot Maintenance Float for Ground Combat and Tactical Vehicles

Recommendations (cont'd)

and operational missions, typically performed with F/A-18 A-D and T-45 aircraft, to continue without interruption. In addition, we recommend that the Commander of the Naval Air Systems Command require F/A-18 and T-45 program offices to prepare and update the life-cycle sustainment plan based on changes to the expected service life.

We recommend that the Deputy Chief of Naval Operations for Warfare Systems develop a communication plan to keep dependent weapon system's divisions and program offices informed of changes in quantity and delivery schedule and reassess impacts on procurement quantities.

We recommend that the Installations and Logistics Deputy Commandant require Installations and Logistics officials to initiate and complete DMFA annual reviews and approve all DMFA authorization changes according to Marine Corps policy.

Management Comments and Our Response

The Chief of Naval Operations, Deputy Director of Air Warfare, responding for the Deputy Chief of Naval Operations for Warfare Systems, agreed to coordinate with the Naval Air Forces Commander and the Naval Air Training Chief to develop a plan to maintain a sufficient quantity of operational aircraft to allow training and operational missions, typically performed with F/A-18 A-D and T-45 aircraft, to continue without interruption. The Deputy Director stated that a plan is in place to achieve 80 percent operational aircraft rates. The Navy provided us copies of the plans to increase mission capable rates; therefore, this recommendation is closed.

The Inspector General for the Naval Air Systems Command, responding for the Commander of the Naval Air Systems Command, agreed with our recommendation to prepare and update the life-cycle sustainment plan based on changes to the expected service life. The Inspector General stated that the F/A-18 and T-45 program offices will prepare the life-cycle sustainment plans by December 31, 2019. Therefore, the recommendation is resolved but will remain open. We will close this recommendation once the Inspector General provides us the plans.

The Chief of Naval Operations, Deputy Director of Air Warfare, responding for the Deputy Chief of Naval Operations for Warfare Systems, expressed concern with our recommendation to develop a communication plan to keep dependent weapon system's divisions and program offices informed of changes in quantity and delivery schedule and reassess impacts on procurement quantities. However, the Deputy Director stated that the Program Objective Memorandum-2021 guidance creates a new structure to increase communication between land, sea, air, and undersea systems. Therefore, the recommendation is resolved but will remain open. We will close this recommendation once we verify that the Program Objective Memorandum-2021 guidance is completed and contains sufficient guidance regarding communication.

The Office of the Director, Marine Corps Staff Audit Coordination Head, responding for the Installations and Logistics Deputy Commandant, agreed with our recommendation to require Installations and Logistics officials to initiate and complete DMFA annual reviews and approve all DMFA authorization changes. The 2018 DMFA annual review was completed January 3, 2019 and the Audit Coordination Head stated that the 2019 DMFA annual review will be initiated in May 2019. Therefore, the recommendation is resolved but will remain open. We received a copy of the completed 2018 DMFA annual review. We will close this recommendation once we verify the initiation of the 2019 DMFA annual review.

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

Recommendations Table

Management	Recommendations Unresolved	Recommendations Resolved	Recommendations Closed
Deputy Chief of Naval Operations for Warfare Systems	None	B.1.a and B.1.b	None
Air Warfare Director, Chief of Naval Operations	None	None	A.1
Deputy Commandant, Installations and Logistics	None	C.1	None
Commander, Naval Air Systems Command	None	A.2.a and A.2.b	None

Note: The following categories are used to describe agency management's comments to individual recommendations.

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


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

January 18, 2019

MEMORANDUM FOR THE COMMANDER, MARINE CORPS LOGISTICS COMMAND
DEPUTY COMMANDANT, INSTALLATIONS AND LOGISTICS
DEPUTY COMMANDANT, COMBAT DEVELOPMENT
AND INTEGRATION
NAVAL INSPECTOR GENERAL

SUBJECT: Navy and Marine Corps Backup Aircraft and Depot Maintenance Float for Ground Combat and Tactical Vehicles (Report No. DODIG-2019-047)

We are providing this report for your information and use. We conducted this audit in accordance with generally accepted government auditing standards.

We considered management comments to a draft of this report when preparing the final report. Comments from the Chief of Naval Operations, Deputy Director of Air Warfare; Office of the Director, Marine Corps Staff Audit Coordination Head; and Inspector General for the Naval Air Systems Command conformed to the requirements of DoD Instruction 7650.03; therefore, we do not require additional comments.

We appreciate the cooperation and assistance received during the audit. Please direct questions to Mr. Kenneth B. VanHove at (216) 535-3777 (DSN 499-9946).

Theresa S. Hull
Assistant Inspector General
Acquisition, Contracting, and Sustainment

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Introduction

We determined whether the quantities of backup aircraft and depot maintenance float allowance (DMFA) for ground combat and tactical vehicles (GCTV) would impact Navy and Marine Corps unit readiness. See Appendix A for a discussion of the scope and methodology and prior audit coverage related to the objective.

Background

The Navy and Marine Corps provide operational units with backup aircraft or DMFA to maintain readiness levels when a unit's primary aircraft or GCTV undergo depot maintenance. Primary aircraft and GCTV are the aircraft and vehicles assigned to the squadrons to perform operational missions. The on-hand quantity of backup aircraft and depot maintenance float vehicles changes daily due to fluctuations in depot workload. As of March 22, 2018, the Navy and Marine Corps had 716 aircraft in a backup status. In addition, the Marine Corps had 33 depot maintenance float vehicles on-hand as of August 7, 2018.

The backup aircraft authorization (BAA) is the quantity of aircraft above a unit's primary aircraft authorization necessary to replace an aircraft that needs scheduled and unscheduled maintenance, modification, inspection, and repair.[1] The BAA is calculated by multiplying the primary aircraft authorization by a planning factor, which is derived from 5 years of historical maintenance data that can be adjusted for events such as lengthy modifications, availability of new aircraft, or lack of historical data.

The DMFA replaces a vehicle that is turned in for scheduled depot repairs, allowing the unit to maintain operational readiness. The Marine Corps calculates DMFA by multiplying the depot demand and the repair cycle time, and then dividing by 365 days.[2] The Marine Corps Order Interim Policy requires the Marine Corps to calculate DMFA annually for programs that are in sustainment.[3]

Offices Involved With Backup Aircraft

Office of the Chief of Naval Operations

The Office of the Chief of Naval Operations (OPNAV) Warfare Systems (N9) consists of four divisions, including the air warfare division (N98) and the surface warfare division. OPNAV N98 manages Navy and Marine Corps aircraft inventories.

[1] Primary aircraft authorization is the aircraft authorized to perform a unit's operational mission and consists of mission, training, development and test, and other aircraft authorizations.

[2] Depot demand is the average number of vehicles planned to receive depot repairs annually. Repair cycle time is the time needed to complete the repair, including transportation, administrative, and actual repair time.

[3] Marine Corps Interim Policy, "Depot Maintenance Float Allowance Requirements Determination," May 5, 2014.

OPNAV N98, in coordination with the Commander, Naval Air Forces (CNAF), distributes aircraft inventory to operational units to meet approved requirements and ensures that aircraft above the authorization are appropriately stored or disposed. In addition, OPNAV N98 annually publishes the planning factors used to calculate the BAA for each aircraft.

Naval Air Systems Command

Naval Air Systems Command officials provide full life-cycle support of naval aviation aircraft, weapons, and systems. Life-cycle support includes research, design, acquisition, test and evaluation, and training. Individual program offices perform the life-cycle support for specific naval aircraft, including the F/A-18, MH-60, and T-45. In addition, Naval Air Systems Command manages the Decision Knowledge Programming for Logistics Analysis and Technical Evaluation–Aircraft Inventory and Readiness Reporting System (DECKPLATE-AIRRS) database, which maintains the Navy and Marine Corps official aircraft inventory information.

Chief of Naval Air Training

The Chief of Naval Air Training (CNATRA) trains Navy and Marine Corps pilots and validates training aircraft authorizations. CNATRA personnel calculate the number of aircraft required for all training aircraft acquisitions, including backup aircraft.

Headquarters, Marine Corps Aviation

Headquarters, Marine Corps Aviation integrates and supervises plans, policies, and budgets for all aviation assets for the Marine Corps. Aviation personnel creates the annual Marine Corps Aviation Plan that identifies the current aircraft force and the aircraft force goals for the next 10 years.

Offices That Determine Depot Maintenance Float Allowance

Headquarters, Marine Corps Installations and Logistics

Installations and Logistics (I&L) develops logistics plans, policies, and initiatives to increase the capability, endurance, and reach of the Marine Corps forces. In addition, I&L provides guidance and oversight of the Marine Corps DMFA decisions. I&L personnel initiate the annual GCTV DMFA calculation and coordinates a review among all Marine Corps stakeholders, including the Marine Corps Logistics Command (LOGCOM) and Headquarters, Marine Corps Combat Development and Integration (CD&I). After stakeholder review, I&L personnel validate and approve the DMFA.

Marine Corps Logistics Command

LOGCOM manages the enterprise life-cycle maintenance program, controls GCTV inventory, and integrates logistics capabilities to maximize Marine Corps materiel readiness and sustainment. LOGCOM is the primary planner for Marine Corps depot level maintenance and calculates the DMFA quantity based on information provided by the life-cycle mangers and Marine Corps depots.

Headquarters, Marine Corps Combat Development and Integration

CD&I officials develop future operational concepts and determine how to organize, train, and equip the Marine Corps. CD&I manages the Total Force Structure Management System (TFSMS), which is the source for all Marine Corps force structure requirements and authorizations. In addition, CD&I manages the approved acquisition objective, which consists of several elements including the DMFA.[4] CD&I validates that the DMFA calculated by LOGCOM supports the warfighting capabilities and enters DMFA requirements into TFSMS.

Navy and Marine Corps Aircraft

The Navy and Marine Corps have 102 different models of aircraft.[5] During this audit, we reviewed the BAA for all models of the F/A-18, MH-60, and T-45 aircraft. The F/A-18 Hornet (F/A-18 A-D models) and Super Hornet (F/A-18 E-F models) are multi-mission naval strike fighters used by the Navy and Marine Corps. The F/A-18 was initially deployed in 1978 and received a major upgrade in the late 1990s. According to program office officials, the F/A-18 A-D is expected to remain in service until 2030 and the F/A-18 E-F replacement is planned to start in the 2030s. See Figure 1 for a picture of an F/A-18F Super Hornet.

Figure 1. F/A-18F Super Hornet, Two-Seat Model
Source: U.S. Navy.

[4] The approved acquisition objective is the quantity of GCTVs the Marine Corps authorized to equip and sustain its components.

[5] For this report, we will refer to "type/model/series" as model.

The MH-60 Seahawk includes the MH-60S and MH-60R models. It is a single rotor, multi-mission helicopter used by the Navy to operate from ships and land bases. The MH-60S performs anti-surface ship warfare, search and rescue, and mine countermeasure missions. The helicopter became operational in 2002 and the Navy expects it to remain in service until 2035. The MH-60R's primary mission is antisubmarine and surface warfare. The helicopter became operational in 2005 and the Navy expects it to remain in service until 2042. See Figure 2 for a picture of a MH-60R helicopter.

Figure 2. MH-60R Helicopter
Source: U.S. Navy.

The T-45 Goshawk is a training aircraft used for intermediate and advanced training of Navy and Marine Corps pilots. The T-45 became operational in 1991, received a major upgrade in the late 1990s, and is expected to be in service until 2035. See Figure 3 for a picture of a T-45 Goshawk.

Figure 3. T-45 Goshawk
Source: U.S. Navy.

Ground Combat and Tactical Vehicles

The Marine Corps has 15 types of GCTV.[6] We reviewed the DMFA for all variants of the Assault Amphibious Vehicle (AAV), Light Armored Vehicle (LAV), and Mine Resistant Ambush Protected (MRAP) vehicle.[7] The AAV is a combat vehicle that can immediately transition from water to land operations. The AAV has been in the Marine Corps inventory since 1972 and has undergone multiple modernization efforts, including the Reliability, Availability, Maintainability/ Rebuild to Standard (RAM/RS) variant, which improved vehicle performance. The Marine Corps planned to extend the service life of the AAV with the Survivability Upgrade modernization program, but the plan was canceled on August 30, 2018. Due to the AAV Survivability Upgrade cancellation, we will only discuss DMFA for the AAV RAM/RS. See Figure 4 for a picture of an AAV.

Figure 4. Assault Amphibious Vehicle
Source: U.S. Marine Corps.

The LAV is a combat vehicle that can perform operations on land and in the water. The LAV has been in the Marine Corps inventory since 1983 and has undergone multiple modernization efforts to extend the service life of the program until 2035. See Figure 5 for a picture of an LAV.

[6] For this report, GCTV type refers to vehicles with the same basic design.

[7] For this report, variant refers to vehicles of the same basic design but are modified to perform specific missions.

Figure 5. Light Armored Vehicle
Source: U.S. Marine Corps.

The MRAP is a tactical vehicle with a blast resistant underbody and other features designed to withstand improvised explosive devices, mines, and direct-fire weapons. The MRAP has been in the Marine Corps inventory since 2007, is currently undergoing maintenance, and upgrades. The Marine Corps plans to retire most MRAPs from service by 2024. See Figure 6 for a picture of an MRAP vehicle.

Figure 6. Mine Resistant Ambush Protected Vehicle
Source: U.S. Marine Corps.

Review of Internal Controls

DoD Instruction 5010.40 requires DoD organizations to implement a comprehensive system of internal controls that provides reasonable assurance that programs are operating as intended and to evaluate the effectiveness of the controls.[8] We identified internal control weaknesses with the use of backup aircraft and the process for determining DMFA for GCTV. Specifically, the Navy used F/A-18 E-F and T-45 backup aircraft for purposes other than replacing aircraft undergoing depot maintenance and the Navy and Marine Corps extended the planned service life of the F/A-18 and T-45 aircraft. In addition, OPNAV N98 officials did not receive notification of changes in quantity and schedule delays of a dependent weapon system. Finally, the Marine Corps did not perform the annual DMFA review and approve all DMFA changes. We will provide a copy of the report to the senior official responsible for internal controls in the Department of the Navy and Marine Corps.

[8] DoD Instruction 5010.40, "Managers' Internal Control Program Procedures," May 30, 2013.

Finding A

Navy and Marine Corps Had Insufficient Quantities of Aircraft

The Navy and Marine Corps did not have a sufficient quantity of operational F/A-18 and T-45 aircraft available to replace all aircraft requiring depot maintenance. Specifically, 245 F/A-18 and 22 T-45 backup aircraft were in a non-operational status. The insufficient quantity of available backup aircraft occurred because the Navy squadrons and training wings used the F/A-18 E-F and T-45 backup aircraft inventory to transition squadrons to newer models and as attrition reserve inventory.[9] In addition, the Navy and Marine Corps extended the planned service life of the F/A-18 and T-45 aircraft. Although pilots were receiving the required amount of training before a deployment, a Navy official stated it was a problem because pilots were barely meeting the minimum requirement. In addition, the Navy and Marine Corps could experience a future shortfall of trained pilots, potentially impacting mission readiness if the aircraft shortages continue.

Navy and Marine Corps Lacked Sufficient Supply of Operational Aircraft

The Navy and Marine Corps did not have enough operational F/A-18 and T-45 aircraft available to replace all aircraft requiring depot maintenance.[10] Specifically, 245 of 310 F/A-18 (79 percent) and 22 of 22 T-45 (100 percent) backup aircraft were in a non-operational status. A non-operational status refers to aircraft that are undergoing depot maintenance or modification and unavailable to replace primary aircraft.

According to Navy Instruction 5442.2, the BAA is calculated by multiplying the primary aircraft authorization by an aircraft's planning factor. Although the Navy and Marine Corps calculated the BAA for the F/A-18 and T-45 aircraft based on Navy Instruction 5442.2, Navy officials stated that there were not enough operational F/A-18 and T-45 aircraft to replace all aircraft requiring depot maintenance. The table identifies the number of F/A-18 and T-45 backup aircraft in an operational and non-operational status.

[9] Attrition reserve inventory is aircraft available to fill the prediction of the number of aircraft that will cease operating when an aircraft is damaged to the extent that repair is uneconomical or impractical.

[10] For this report, operational aircraft are in ready-to-fly status.

Table. F/A-18 and T-45 Backup Inventory Status Example

Aircraft	Operational Status	Non-Operational Status	Total Backup Inventory
F/A-18A	8	20	28
F/A-18B	0	0	0
F/A-18C	12	127	139
F/A-18D	3	28	31
F/A-18E	21	37	58
F/A-18F	21	33	54
Subtotal	**65**	**245**	**310**
T-45C	0	22	22
Total	**65**	**267**	**332**

Source: OPNAV N98.

Backup Aircraft Used for Other Purposes

The Navy squadrons and training wings used the F/A-18 E-F and T-45 backup aircraft inventory to transition squadrons to newer models and as attrition reserve inventory. Navy Instruction 5442.2 states that backup aircraft are available for operational missions to permit scheduled and unscheduled maintenance, modifications, inspections, and repairs of primary aircraft. The Navy used F/A-18 E-F backup aircraft inventory to transition squadrons that were scheduled to receive F-35 aircraft. In addition, CNATRA used the backup training aircraft to replace primary training aircraft that were damaged to the extent that repair was uneconomical or impractical.

F/A-18 Backup Aircraft Used to Transition Squadrons

The Navy used F/A-18 E-F backup aircraft inventory to transition squadrons that were scheduled to receive F-35 aircraft. The F-35 is the replacement aircraft for the F/A-18 A-D. According to a program official, the Navy planned to replace the F/A-18 A-D with the F-35 beginning in FY 2012. However, after delays with receiving the F-35, the Navy decided to replace the F/A-18 A-D primary aircraft with F/A-18 E-F backup aircraft.

Since 2010, OPNAV N98 and CNAF used F/A-18 E-F backup aircraft to transition 10 F/A-18 A-D squadrons and will use additional F/A-18 E-F backup aircraft to transition 4 more squadrons in FY 2019. Because of the reduced number of available F/A-18 backup aircraft, CNAF moved primary aircraft from the training squadrons to the operational squadrons that were preparing for deployment. As a result, there were not enough primary aircraft for training squadrons to complete all training missions with a full squadron.

T-45 Backup Aircraft Used to Fill Losses

CNATRA used the backup training aircraft to replace primary training aircraft that were damaged to the extent that repair was uneconomical or impractical. For example, CNATRA used backup training aircraft to replace two primary training aircraft that crashed in 2017 because the Navy did not have T-45 aircraft in attrition reserve inventory. Even though CNATRA used the backup aircraft to fill losses in accordance with Navy Instruction 5442.2, these backup aircraft will not be available to replace aircraft undergoing depot maintenance. A CNATRA official stated that the T-45 production line was closed and CNATRA would continue to use backup inventory to replace primary T-45 training aircraft, as needed. As a result, CNATRA could not obtain any additional T-45 aircraft to increase attrition reserve and backup inventory. The limited amount of training aircraft available for backup inventory could impact the amount of training pilots receive and the number of pilots being trained. OPNAV N98 should coordinate with CNATRA to develop a plan to maintain a sufficient quantity of operational aircraft to allow training missions, typically performed with T-45 aircraft, to continue without interruption.

Backup aircraft will not be available to replace aircraft undergoing depot maintenance.

F/A-18 and T-45 Service Life Extended

The Navy and Marine Corps did not have enough operational F/A-18 and T-45 backup aircraft because the Navy and Marine Corps extended the service life of the aircraft. In order to extend the service life, the F/A-18 aircraft are undergoing a service life extension program (SLEP) and the T-45 aircraft will undergo a SLEP in FY 2019. A SLEP is a modification to extend the service life of an aircraft beyond what was planned. The Navy and Marine Corps will need backup aircraft to replace the squadrons' F/A-18 and T-45 primary aircraft undergoing the SLEPs.

F/A-18 Service Life Extended Beyond Expectation

The Navy and Marine Corps exceeded the F/A-18 A-D planned service life and the Navy will exceed the original F/A-18 E-F planned service life. The F/A-18 A-D models were designed for a service life of 6,000 flight hours and expected to fly until 2008. However, the Navy and Marine Corps needed to extend the service life to 10,000 flight hours, which is now the expected flight hour requirement for when the F/A-18 A-D will be replaced by the F-35, in 2030. The F/A-18 E-F models were designed for a service life of 6,000 flight hours and are undergoing a SLEP to reach 9,000 flight hours. The Navy will replace the F/A-18 E-F with the F-35 and the Next Generation Air Dominance program starting in the 2030s.

According to an OPNAV N98 official, the Navy did not plan for the increased unscheduled depot-level maintenance that resulted from flying the F/A-18 fleet past the intended service life and did not update the F/A-18 A-D and F/A-18 E-F life-cycle sustainment plans until 2018. Since the Navy did not plan for increased maintenance, there were not enough spare parts and skilled maintainers to keep up with the increased depot demand from SLEPs and unscheduled maintenance of the aging aircraft. As of January 2018, 135 F/A-18 A-D aircraft were undergoing depot maintenance. Each of the 135 F/A-18 A-D were out of service for more than a year and 77 of these aircraft had been out of service for more than 3 years.

To minimize the problems with the F/A-18 E-F, the Navy established the Naval Aviation Maintenance Center for Excellence in 2018 to provide training to maintainers and perform aircraft maintenance. These actions will address the shortage of operational aircraft for the F/A-18 E-F. OPNAV N98 should coordinate with CNAF to develop a plan to maintain a sufficient quantity of operational aircraft to allow training and operational missions, typically performed with F/A-18 A-D aircraft, to continue without interruption.

T-45 Service Life Extended Beyond Expectation

The Navy will exceed the T-45 planned service life. The program office planned a service life of 14,400 flight hours and expected to fly the T-45 until 2018. However, in 2013, the Navy decided to extend the service life to 19,800 flight hours, keeping the T-45 in service until 2042 when the Navy expects the replacement aircraft to be operational. The Navy will need backup training aircraft to replace up to 24 aircraft per year that are undergoing the SLEP from FY 2019 through FY 2027. OPNAV N98 estimated it will be short by 9 T-45 backup training aircraft in FY 2019 and will be short by 21 backup training aircraft from FYs 2021 through 2023.

According to a program official, the Navy will start considering T-45 replacement options in 2022 or 2023. The Navy plans to phase out the T-45 beginning in 2035. In order to prevent a shortage of available T-45 training aircraft, the replacement aircraft must achieve initial operating capabilities in 2035 and be operational in 2042. The T-45 program office should prepare a life-cycle sustainment plan that includes changes to the expected service life and the F/A-18 and T-45 program offices should implement procedures to incorporate future program changes to the plans, as necessary. The plans should include the effects of delayed replacement programs and extending the service life on aircraft maintenance, spare parts, and aircraft inventory management during replacement aircraft acquisition planning.

Impact of Aircraft Shortage on Training Pilots

While the Navy and Marine Corps pilots were receiving the minimum amount of training prior to deployment, a Navy official stated it was a problem that pilots barely obtain the minimum amount of training. Due to the limited number of operational F/A-18 aircraft, CNAF moved the aircraft from training squadrons to squadrons being deployed. According to an OPNAV N98 official, F/A-18 pilots received only the minimum number of training hours needed to meet their training requirements because of the aircraft shortage. If operational aircraft continue to decrease, pilots may be less proficient during wartime missions.

F/A-18 pilots received only the minimum number of training hours needed to meet their training requirements because of the aircraft shortage.

The Navy and Marine Corps could experience a future shortfall of trained pilots, potentially impacting mission readiness. The Navy and Marine Corps cannot procure additional F/A-18 A-D and T-45 aircraft. According to Navy officials, due to the lack of aircraft, pilots were not flying the hours they anticipated and were leaving the Navy and Marine Corps. CNATRA was aware of OPNAV N98's estimated shortages in FY 2019 and if aircraft shortages continued, the Navy and Marine Corps would not be able to train the required number of pilots. The Navy and Marine Corps could continue to experience aircraft shortages if lessons learned, such as considering the impact of service life extensions, are not implemented for future Navy and Marine Corps programs including the F-35 aircraft, Next Generation Air Dominance program, and T-45 training aircraft replacement.

Recommendations, Management Comments, and Our Response

Recommendation A.1.

We recommend that the Chief of Naval Operations, Director of Air Warfare, coordinate with the Naval Air Forces Commander and the Naval Air Training Chief to develop a plan to maintain a sufficient quantity of operational aircraft to allow training and operational missions, typically performed with F/A-18 A-D and T-45 aircraft, to continue without interruption.

Chief of Naval Operations, Director of Air Warfare Comments

The Chief of Naval Operations, Deputy Director of Air Warfare, responding for the Deputy Chief of Naval Operations for Warfare Systems, agreed with our recommendation, stating that a plan is currently in place to increase mission capable rates to 80 percent, which will increase aircraft availability to meet emergent training needs.

Our Response

Comments from the Deputy Director addressed the specifics of the recommendation. The Navy provided copies of the plans to increase mission capable rates; therefore, the recommendation is closed.

Recommendation A.2.

We recommend that the Commander of Naval Air Systems Command:

a. **Require the T-45 program office to prepare a life-cycle sustainment plan that includes changes to the expected service life.**

b. **Require the F/A-18 and T-45 program offices to implement a plan to incorporate future program changes, as necessary. The plan should include the effects of delayed replacement programs and extension of the service life on aircraft maintenance, spare parts, and aircraft inventory management during replacement aircraft acquisition planning.**

Commander of Naval Air Systems Command Comments

The Inspector General for the Naval Air Systems Command, responding for the Commander of the Naval Air Systems Command, agreed with our recommendation, stating that the F/A-18 and T-45 program offices will prepare life-cycle sustainment plans by December 31, 2019.

Our Response

Comments from the Inspector General addressed the specifics of the recommendation; therefore, the recommendation is resolved but will remain open. We will close this recommendation once we verify that the Naval Air Systems Command F/A-18 and T-45 life-cycle sustainment plans include changes to the expected service life.

Finding B

Changes in Quantity and Schedule of a Dependent Weapon System

The Navy had more MH-60R and MH-60S helicopters than it needed to maintain readiness. This occurred because OPNAV N9 did not require communication between its divisions regarding changes that would impact a dependent weapon system. Specifically, OPNAV N98 officials did not receive notification of changes in the Littoral Combat Ship's (LCS) quantity and schedule delays. The MH-60R and MH-60S helicopters would deploy on the LCS. As a result, the Navy spent $1.4 billion to procure 57 helicopters that were in storage and will spend more than $2 million annually to store these helicopters until at least 2020 when additional LCSs are delivered.

Sufficient Quantities of Backup Helicopters

The Navy had enough backup MH-60R and MH-60S helicopters to meet its mission. Navy Instruction 5442.2 explains that backup aircraft are used to provide a replacement aircraft when aircraft need scheduled and unscheduled maintenance, modification, inspection, and repair. The Navy can replace MH-60 helicopters that are undergoing depot maintenance and the units have the helicopters needed to complete their expected missions until at least 2034.

Helicopter Inventory Exceeded Amount Needed

The Navy had more MH-60R and MH-60S helicopters than it needed to maintain readiness. In July 2018, the Navy identified a requirement for 206 MH-60R and 189 MH-60S helicopters to meet training and operational missions and 29 MH-60R and 49 MH-60S backup helicopters. However, the Navy had a total of 270 MH-60R and 261 MH-60S helicopters in inventory. Therefore, the Navy decided to store 34 MH-60R and 23 MH-60S excess helicopters and preserved them for future use. CNAF plans to rotate these excess MH-60R and MH-60S helicopters with operational helicopters every 2 to 3 years to reduce the accumulated flight hours across the fleet. According to an OPNAV N98 official, the rotation would allow the fleet to meet the expected service life of 2042 for the MH-60R and 2035 for the MH-60S.

Lack of Communication Between Divisions

The Navy had more MH-60R and MH-60S helicopters than it needed because OPNAV N9 did not require communication between OPNAV N98 and surface warfare divisions regarding changes that would impact a dependent weapon system's procurement quantity. OPNAV N98 officials did not receive notification of changes in quantity and schedule delays of a dependent weapon system. Specifically, the LCS procurement quantity decreased and the LCS experienced schedule delays that impacted the MH-60 helicopter. According to an OPNAV N98 official, there is not a formal process to notify dependent weapon system's divisions of changes in program status.

OPNAV N98 officials did not receive notification of changes in quantity and schedule delays of a dependent weapon system.

In 2007, the Navy planned to purchase 55 LCSs. OPNAV N98 determined the quantity of MH-60R helicopters based on this requirement. The MH-60 program office used a joint Service contract to purchase MH-60R helicopters in 2012. In 2014, the Navy decreased the LCS procurement quantity from 55 to 32 ships. OPNAV N98 only received notification through language included in the FY 2015 President's Budget that decreased the MH-60R helicopter procurement quantity because of the reduction in the LCS procurement quantity. However, the Navy was already contractually obligated to purchase 120 helicopters and the reduction would have decreased the procurement total below that minimum. The Naval Air Systems Command conducted a study and determined that there would be a greater financial impact on the DoD to cancel the contract rather than purchase the additional MH-60R helicopters. Therefore, the Navy completed the contractual purchase of the minimum number of MH-60R helicopters.

In addition, the Navy originally planned to receive the 32 LCSs by September 2014. However, as of February 2018, the Navy had only received 11 ships. The Navy now anticipates receiving the remaining LCSs by October 2023, 9 years after the original delivery date. By 2023, the Navy will no longer have excess MH-60S helicopters, but will still have 34 excess MH-60R helicopters because the total quantity of helicopters was purchased based on a total of 55 LCSs. The Navy will continue to keep a quantity of 57 excess MH-60 helicopters in preservation until receiving the LCSs or other ships and fielding the helicopters to operational units.

If OPNAV N9 divisions communicate in a timely manner about a dependent weapon system's quantity changes and delivery status, program office officials could attempt to decrease procurement quantities and extend the delivery period or delay procurement to avoid paying storage and preservation fees for weapon systems that may not be needed. OPNAV N9 should develop and implement a

communication plan to keep dependent weapon system's divisions and program offices up to date on changes in quantity and delivery schedule. In addition, OPNAV N9 should reassess the procurement quantity if there are any changes to the quantity of a dependent weapon system.

Cost and Storage of Helicopters Currently Not Needed

As a result, the Navy spent $1.4 billion to procure 57 helicopters that it did not need until at least 2020. Specifically, the Navy spent $996.9 million to procure 34 MH-60R helicopters and $398.4 million to procure 23 MH-60S helicopters that it did not need until at least FY 2020. Furthermore, the need for these helicopters will continue to be delayed if the LCS delivery schedule is delayed beyond October 2023.

The Navy spent $1.4 billion to procure 57 helicopters that it did not need until at least 2020.

In addition, the Navy spends between $22,500 and $77,000 annually per helicopter in storage, which includes the costs for preservation, scheduled maintenance, annual upkeep, and shipping. Specifically, the Navy will continue spending $1.1 million annually to store the 34 MH-60R helicopters and $0.9 million annually to store the 23 MH-60S helicopters that are not needed until at least FY 2020. Although the Navy is currently spending $2 million annually to store the excess helicopters, according to a CNAF official, the Navy would spend an additional $1.3 million per year to keep these helicopters in an operational status.

Recommendations, Management Comments, and Our Response

Recommendation B.1.

We recommend that the Deputy Chief of Naval Operations for Warfare Systems:

a. Implement a communication plan to keep dependent weapon system's divisions and program offices up to date on changes in quantity and delivery schedule.

b. Reassess the procurement quantity if there are any changes to the quantity of a dependent weapon system.

Deputy Chief of Naval Operations for Warfare Systems Comments

The Chief of Naval Operations, Deputy Director of Air Warfare, responding for the Deputy Chief of Naval Operations for Warfare Systems, expressed concern with our recommendation. The Deputy Director stated that although LCS

was delayed, aviation made a conscious decision to continue procuring the H-60 aircraft based on the aircraft economic order quantity and expected LCS production improvements.

Additionally, the Deputy Director stated the annual Program Objective Memorandum budget development process facilitates communication between Resource Sponsors. Program Objective Memorandum-2021 guidance creates a new structure assigning Navy platform and systems based upon mission area, which will increase communication between land, sea, air, and undersea systems.

Our Response

Comments from the Deputy Director addressed the specifics of the recommendation; therefore, the recommendation is resolved but will remain open. We recognize that the Navy was contractually obligated to purchase a minimum number of helicopters and that there would have been a greater financial impact on the DoD to cancel the contract rather than purchase the additional MH-60R helicopters. However, the intent of the recommendation was to increase communication across dependent weapon systems and reassess the procurement quantities for the dependent weapon systems as needed. The Chief of Naval Operations Program Objective Memorandum-2021 guidance should address the intent of the recommendation. We will close this recommendation once we verify that the Program Objective Memorandum-2021 guidance is completed and contains sufficient guidance regarding communication.

Finding C

Depot Maintenance Float Lacked Oversight

The Marine Corps had sufficient quantities of depot maintenance float vehicles on-hand for the AAV RAM/RS, LAV, and MRAP to maintain unit readiness.[11] However, the Marine Corps could not justify AAV RAM/RS and MRAP DMFA authorizations. This occurred because the I&L did not perform the annual DMFA review and approve all DMFA authorization changes between October 2014 and October 2018. As a result, the Marine Corps may unnecessarily spend funds on depot maintenance float vehicles that are not needed. In addition, other GCTV programs may have the incorrect DMFA quantity on-hand needed to maintain unit readiness.

Sufficient Quantities of Depot Maintenance Float

The Marine Corps had sufficient quantities of depot maintenance float vehicles on-hand for the AAV RAM/RS, LAV, and MRAP to maintain unit readiness. Marine Corps Order 5311.1E states that DMFA supports the withdrawal of equipment from organizations for scheduled depot-level maintenance.[12] The MRAP does not require on-hand depot maintenance float. The Marine Corps plans to retire the MRAP before these vehicles need scheduled depot maintenance. Additionally, the Marine Corps changed their force structure and deactivated 3 AAV RAM/RS companies and 3 LAV companies consisting of 138 and 75 vehicles, respectively, and returned these vehicles to the depot for storage. According to LOGCOM officials, the depot used these vehicles to replace AAV RAM/RS and LAV vehicles at the units before they were sent for scheduled depot maintenance, which helped maintain unit readiness. However, the Marine Corps typically did not have additional GCTVs to use as depot maintenance float and units were required to remove vehicles from the fleet prior to receiving a replacement. A LOGCOM official stated that the units were reluctant to send their GCTVs to the depot for scheduled maintenance because they may not receive a replacement vehicle in a timely manner.

[11] Due to the cancellation of the AAV Survivability Upgrade program, we will not discuss whether the Marine Corps had a sufficient quantity of depot maintenance float vehicles on-hand or authorized for the AAV Survivability Upgrade.

[12] Marine Corps Order 5311.1E, "Total Force Structure Process," November 18, 2015.

Depot Maintenance Float Allowance Authorizations May Not Align With Scheduled Maintenance

Although the on-hand depot maintenance float was sufficient to maintain unit readiness, the Marine Corps could not justify AAV RAM/RS and MRAP DMFA authorizations. Marine Corps Order 5311.1E states that LOGCOM should calculate DMFA authorizations for all equipment needing scheduled depot maintenance. However, the Marine Corps did not always use the calculation when determining the DMFA authorization. For example, the CD&I officials did not use the LOGCOM DMFA formula to calculate DMFA even though the AAV RAM/RS will undergo scheduled depot maintenance until FY 2019. The CD&I officials reduced the DMFA authorization for the AAV RAM/RS from 70 vehicles in FY 2017 to 0 in a FY 2018 DMFA authorization change request to support the incremental AAV RAM/RS retirement. According to CD&I officials, the Marine Corps accepted the risk of not having the correct number of vehicles available for the operating forces. Likewise, the CD&I officials did not consider the LOGCOM DMFA formula when determining the MRAP DMFA authorization. After allocating MRAPs to the other six approved acquisition objective elements, CD&I officials allocated the remaining 58 MRAPs to DMFA.[13] See Appendixes B and C for more discussion of the MRAP vehicles stored at a Marine Corps depot, including the 58 MRAPs allocated to DMFA.

Oversight of Depot Maintenance Float Annual Review and Changes Needed

The Marine Corps could not justify DMFA authorizations because the I&L did not perform the annual DMFA review and approve all DMFA authorization changes between October 2014 and October 2018. Marine Corps Order 5311.1E requires the I&L to coordinate an annual review to determine the accuracy of DMFA authorizations for all Marine Corps' GCTV. The last time the I&L completed an annual review was in 2014. The I&L started the annual review in 2015; however, officials could not recall why it was not completed. The I&L initiated the annual DMFA review in May 2018, which had not been completed as of October 2018.

Marine Corps could not justify DMFA authorizations because the I&L did not perform the annual DMFA review.

In addition to the annual review, Marine Corps Order 5311.1E requires the I&L to approve all DMFA authorization changes that occur outside of the annual review process. While the I&L officials approved some DMFA authorization changes, they did not approve all changes. For example, the I&L officials approved a

[13] The approved acquisition objective includes the following seven elements: Active and Reserve Operating Forces, Supporting Establishment for the Non-Operating Forces, DMFA, Maritime Prepositioning Force, Marine Corps Prepositioning Program-Norway, Marine Expeditionary Unit Augmentation Program-Kuwait, and War Reserve.

September 2016 DMFA authorization change for the LAV from 83 to 60. However, the I&L officials did not approve the August 2016 change that reduced the AAV RAM/RS DMFA authorization from 70 to 0. The I&L should initiate and complete the DMFA annual reviews and approve all DMFA authorization changes, in accordance with Marine Corps guidance.

Risk of Incorrect Depot Maintenance Float Allowance Quantities

The Marine Corps may unnecessarily spend funds on depot maintenance float vehicles that are not needed. The I&L is required to initiate an annual DMFA review on all GCTV programs that need scheduled depot maintenance. Without the review, the Marine Corps GCTV programs may potentially have an inaccurate DMFA and not reflect Marine Corps needs. For example, the MRAP program risks filling their overstated DMFA authorization and using resources to maintain and store these vehicles. In addition, other GCTV programs may have the incorrect depot maintenance float quantity on-hand to maintain unit readiness since the I&L did not complete an annual DMFA review between October 2014 and October 2018.

The Marine Corps may unnecessarily spend funds on depot maintenance float vehicles that are not needed.

Recommendation, Management Comments, and Our Response

Recommendation C.1.

We recommend that the Installations and Logistics Deputy Commandant require Installations and Logistics officials to initiate and complete depot maintenance float allowance annual reviews and approve all depot maintenance float allowance authorization changes according to Marine Corps Order 5311.1E.

Installations and Logistics Deputy Commandant Comments

The Office of the Director, Marine Corps Staff Audit Coordination Head, responding for the I&L Deputy Commandant, agreed with the recommendation. The 2018 DMFA annual review was completed on January 3, 2019. The Audit Coordination Head stated that the 2019 DMFA annual review will be initiated during May 2019.

Our Response

Comments from the Audit Coordination Head addressed the specifics of the recommendation; therefore, the recommendation is resolved but will remain open. We received a copy of the completed 2018 DMFA annual review. We will close this recommendation once we verify the initiation of the 2019 DMFA annual review.

Appendix A

Scope and Methodology

We conducted this performance audit from January 2018 through November 2018 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.

To determine whether the Navy and Marine Corps have sufficient quantities of backup aircraft and depot maintenance float for GCTV, we interviewed stakeholders from the following offices to identify roles and responsibilities and obtain documentation.

- OPNAV N98
- CNAF
- Naval Air Systems Command
- CNATRA
- Headquarters, Marine Corps Aviation
- I&L
- LOGCOM
- CD&I
- Program Executive Office Land Systems

We reviewed the following guidance related to backup aircraft and DMFA.

- Secretary of the Navy Instruction 5442.2, "Management of the Naval Aircraft Inventory," June 2, 2015
- Marine Corps Order 5311.1E, "Total Force Structure Process," November 18, 2015
- Marine Corps Order 4790.24, "Enterprise Lifecycle Maintenance Program," January 23, 2012
- Marine Corps Interim Policy Message "Depot Maintenance Float Allowance Requirements Determination," May 5, 2014

Universe and Sample of Aircraft and Ground Combat and Tactical Vehicles

To determine if there was a sufficient quantity of backup aircraft and depot maintenance float for GCTV, we obtained a universe of Navy and Marine Corps aircraft and GCTV. The quantity consisted of 102 different models of aircraft and 15 types of GCTV. We nonstatistically selected nine different aircraft models and three types of GCTV. We considered value, quantity, and the differences between on-hand and authorized inventory when selecting the aircraft and GCTV for review. Specifically, we selected and reviewed the following aircraft and GCTV.

- F/A-18A
- F/A-18B
- F/A-18C
- F/A-18D
- F/A-18E
- F/A-18F
- MH-60R
- MH-60S
- T-45C
- AAV
- LAV
- MRAP

Backup Aircraft and Depot Maintenance Float Analysis

We collected and analyzed documents that the Navy and Marine Corps used to plan, calculate, approve, and distribute backup aircraft and DMFA for GCTV. We identified the guidance and procedures used by OPNAV N98 to determine the quantity of backup aircraft for the F/A-18 (models A-F), MH-60 (models R and S), and T-45 (model C). We determined whether the Navy and Marine Corps correctly calculated BAA and compared it to the quantity of operational backup aircraft in DECKPLATE-AIRRS. In addition, we determined the impact of aircraft service life and assessed the impact of efforts to extend service life on the quantity of backup aircraft required. Finally, we determined the average cost for F/A-18 (models A-F), MH-60 (models R and S), and T-45 (model C) on-hand backup aircraft inventories.

We identified the guidance, procedures, and approval process for determining DMFA for GCTV. We obtained Marine Corps GCTV inventory data from CD&I and LOGCOM that included total vehicle and DMFA requirements. We determined whether Marine Corps stakeholders correctly calculated the DMFA for the AAV, LAV,

and MRAP family of vehicles and if there was support for the DMFA authorization. In addition, we determined the impact of the GCTV service life and assessed the impact of efforts to extend service life on the quantity of the DMFA required. We determined the value of the AAV, LAV, and MRAP DMFA inventories based on Marine Corps cost data.

Use of Computer-Processed Data

We used computer-processed data obtained from DECKPLATE–AIRRS and TFSMS.

DECKPLATE-AIRRS is the Navy's official aircraft inventory program of record for all Navy and Marine Corps aircraft. It provides current and historical data on Navy and Marine Corps aircraft location, status, and service life. We relied on DECKPLATE-AIRRS for the planning factors, aircraft inventory, and aircraft status. We conducted a physical inventory of the F/A-18, MH-60, and T-45 backup aircraft assigned to squadrons located at Patuxent River, Maryland to verify the aircraft's location, serial number, and status data in DECKPLATE-AIRRS. Based on our physical inventory, we determined that the data were sufficiently reliable for the purposes of this audit.

TFSMS is the single, authoritative data source that documents all force structure requirements and authorizations, to include Marine Corps GCTVs. TFSMS captures the approved force structure changes for equipment and is the source for all approved acquisition objectives throughout their lifecycles. We relied on TFSMS data to identify the DMFA quantities for AAV, LAV, and MRAP family of vehicles. We compared the data from TFSMS to documentation provided by I&L and CD&I to determine whether both sources had the same DMFA quantity. The DMFA quantity contained in TFSMS matched the quantity in the documents provided by I&L and CD&I. Therefore, we determined that the data within TFSMS were sufficiently reliable for the purposes of this audit.

Prior Coverage

During the last 5 years, the DoD Office of Inspector General (DoD OIG) and the Army Audit Agency issued five reports discussing backup aircraft or depot maintenance float. Unrestricted DoD OIG reports can be accessed at http://www.dodig.mil/reports.html/. Unrestricted Army Audit Agency reports can be accessed at https://www.aaa.army.mil/.

DoD OIG

Report No. DODIG-2018-130, "Procurement Quantities of the AH-64E Apache New Build and Remanufacture Helicopter Programs," June 25, 2018

> The DoD OIG determined that the Deputy Chief of Staff of the Army officials could not justify the planned procurement quantities of 67 float AH-64Es. The Deputy Chief of Staff of the Army officials did not conduct the analyses required by DoD and Army guidance to determine the necessary float quantities before approval.

Report No. DODIG-2018-060, "Marine Corps Assault Amphibious Vehicle Survivability Upgrade," January 4, 2018

> The DoD OIG determined that the Marine Corps increased the AAV Survivability Upgrade's allocated to DMFA vehicles without adequate documentation to justify the need. The increase in DMFA vehicles is a result of reducing the numbers of AAV Survivability Upgrade's to be fielded to operational units in order to keep the program within its cost baselines.

Report No. DODIG-2014-123, "Air Force Did Not Justify the Need for MQ-9 Reaper Procurement Quantities," September 30, 2014

> The DoD OIG determined that the Air Combat Command did not support the need for the planned procurement quantity of 32 backup aircraft. Air Combat Command used a planning factor of 10 percent to calculate the number of backup aircraft. However, there is no support or rationale for using the 10 percent planning factor.

Report No. DODIG-2013-084, "Increased Procurement Quantity for CH-53K Helicopter Not Justified," May 31, 2013

> The DoD OIG determined that the CH-53K procurement quantity increased from 156 to 200 aircraft, which included an increase of all aircraft inventories. Headquarters, Marine Corps Aviation did not support its determination of those aircraft inventory requirements.

Army

Report No. A-2017-0011-ALM, "Operational Readiness Float Requirements (CONUS)," December 5, 2016

The Army determined that the Army's operational readiness float requirements were not properly calculated or supported. This occurred because there were no processes and guidance to ensure personnel properly calculated the operational readiness float authorization, collected demand data, reviewed operational readiness float use and requests, and provided sufficient oversight of the program. As a result, the Army did not have assurance that the operational readiness float requirements program increased unit equipment readiness, was cost-effective, or necessary.

Appendix B

Other Matters of Interest

The MRAP program is subject to a Marine Requirements Oversight Council (MROC) annual assessment that reviews the quantity of vehicles the Marine Corps will retain and sustain. In November 2016, the MROC approved the reset and communications upgrades for 2,007 MRAPs, including 218 at operational and supporting units, 874 stored overseas, and 915 stored at Marine Corps Logistics Base Barstow, California (Barstow).[14] On July 2, 2018, we issued a notice of concern discussing the potential issues related to 915 MRAPs that would be reset, receive communication upgrades, and then placed in storage. Of the 915 vehicles, 857 are for war reserve and 58 are for DMFA.[15] See Appendix C for a copy of the notice of concern and associated responses.

In 2018, Marine Corps officials raised concerns regarding whether the approved requirement to reset and upgrade all of the 915 vehicles stored at Barstow was still valid. CD&I and LOGCOM officials stated that the majority of vehicles in storage at Barstow may never be used in operations, and the MROC should consider deferring some of this work. We suggested the I&L Deputy Commandant and CD&I Deputy Commandant should consider either deferring the funding of additional work until it meets with the MROC in FY 2019 or meet with the MROC in FY 2018 to determine whether spending funds for the reset and upgrade of the remaining MRAPs is needed to meet Marine Corps requirements. In addition, we suggested the MROC should consider the mission impact of the storage level for the MRAPs stored at Barstow.

The CD&I, Capabilities Development Directorate Director responded to the notice of concern and described the actions taken by the Marine Corps to address the potential issues.

Notice of Concern and Actions Taken by the Marine Corps

Reset

~~(FOUO)~~ In November 2016, the MROC approved for the Marine Corps to reset 915 MRAPs that would be stored at Barstow. As of July 2018, some of reset work was not completed. One contractor has not been awarded a contract to start the reset on 239 vehicles estimated to cost $[redacted] million and another contractor requested $[redacted] million, in addition to the $35.2 million it received in a September 2016 contract, to complete ongoing work on an additional 198 vehicles. Furthermore, a CD&I

[14] Reset is repairing the vehicles to military standard and rebuilding the vehicles to extend the useful life with no decrease in performance specifications.

[15] War reserve is equipment, supplies, and materials placed in storage and used if needed in wartime.

~~(FOUO)~~ official stated that there were an additional 46 vehicles planned for reset estimated to cost $20.2 million. CD&I and I&L officials initially recommended that the Marine Corps defer the reset of the 239 vehicles until the next MROC assessment. According to a CD&I official, it was an acceptable near-term risk based on projected program changes, including a decrease in the MRAP requirement over the next 5 years. In June 2018, CD&I and I&L recommended that the Marine Corps defer the reset of 244 additional vehicles until the MROC made future requirements decisions. The Marine Corps will avoid $67.2 million in MRAP costs if the MROC agrees with CD&I and I&L to defer the work and reallocate the funds to other critical combat systems.

Integration of Communications Upgrades

~~(FOUO)~~ The Marine Corps planned to upgrade communications on all MRAPs that were reset, including the 915 vehicles that will be stored at Barstow. LOGCOM and Programs and Resources Deputy Commandant officials estimated the integration of communications upgrades costs $[redacted] per vehicle for a total of $[redacted] million. In June 2018, CD&I and I&L officials recommended that the Marine Corps defer the communications upgrades for 601 vehicles until the MROC made future requirements decisions. According to CD&I officials, the Special Operations Command vehicles and work on vehicles already in progress needed to complete the integration of communications. The Marine Corps will avoid $19.2 million in costs if the MROC agrees with CD&I to defer the communications upgrades on these vehicles.

Level of Preservation and Storage

The Marine Corps plans to preserve and store 915 MRAPs at Barstow. The Marine Corps considered two levels of preservation and storage, which differed in cost and hours to get the vehicle ready to ship for a mission. We suggested the Marine Corps consider the mission impact of the storage level for the MRAPs that are to be stored at Barstow. CD&I officials stated the vehicles will be maintained at the least expensive level of preservation and storage. The Marine Corps will save $3.3 million annually and $16.6 million over a 5-year period by remaining with the least expensive level of storage.

Cost Avoidance

The Marine Corps avoided spending at least $103 million on MRAPs because CD&I and I&L deferred the reset for 244 vehicles, deferred the communications upgrades for 601 vehicles, and will store 915 vehicles at Barstow at the least expensive level of preservation and storage. If the MROC agrees with CD&I and I&L on the deferral of the reset and communication upgrades, the Marine Corps will be able to reallocate these funds to other critical combat systems.

Appendix C

Notice of Concern

~~FOR OFFICIAL USE ONLY~~

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

July 2, 2018

MEMORANDUM FOR DEPUTY COMMANDANT, INSTALLATIONS AND LOGISTICS
DEPUTY COMMANDANT, COMBAT DEVELOPMENT AND INTEGRATION
COMMANDING GENERAL, MARINE CORPS LOGISTICS COMMAND

SUBJECT: Potential Cost Savings with the Mine Resistant Ambush Protected Vehicle (Project No. D2018-D000AT-0091.000)

This memorandum is being issued as a result of concerns identified during an ongoing audit that is being conducted in accordance with generally accepted government auditing standards. The work conducted on this 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. This memorandum, management comments, and actions taken during the course of the audit in response to the suggested actions will be included in the final report.

Our overall audit objective is to determine whether the Navy and Marine Corps had sufficient quantities of backup aircraft and depot maintenance float for ground combat and tactical vehicles.[1] During the subject audit, we identified potential issues related to the quantity of Mine Resistant Ambush Protected (MRAP) vehicles that would be reset, receive communication upgrades, and then placed in storage at Marine Corps Logistics Base (MCLB) Barstow, California.[2] The Marine Corps categorized the MRAPs placed in storage as war reserve and depot maintenance float.[3]

In November of 2016, the Marine Corps decided to reset and integrate upgraded communications equipment on 2,007 MRAPs. During our meetings with Headquarters Marine Corps, Combat Development and Integration (CD&I) and Marine Corps Logistics Command officials to discuss depot maintenance float for MRAPs, a time sensitive issue related to the 2016 decision to reset and upgrade 2,007 MRAPs was brought to our attention. The current plan is to place 915 MRAPs in storage at MCLB Barstow. In addition to the 915 MRAPs stored at MCLB Barstow, the Marine Corps is fielding 218 MRAPs to operational and supporting units and storing 874 MRAPs overseas for contingencies. The Marine Corps officials raised concerns regarding whether the currently approved requirement was still valid. Marine Corps officials stated that the majority of vehicles in storage may never be used in operations and the Marine Requirements Oversight Council (MROC) should consider deferring some of this work. It is our understanding the MROC is scheduled to review this requirement again in the first quarter, FY 2019. We suggest the CD&I Deputy Commandant (DC) and Installations and Logistics (I&L) DC consider scheduling a meeting the MROC in FY 2018 to revalidate this requirement before expending additional FY 2018 funding or committing additional funds in future years to reset, upgrade, and store MRAPs.

[1] Depot maintenance float are vehicles provided to an operating unit to maintain their readiness level when its vehicle is undergoing depot maintenance.
[2] Reset is repairing the vehicles to military standard and rebuilding the vehicles to extend the useful life with no decrease in performance specifications.
[3] War reserve is equipment, supplies, and materials placed in storage to be used if needed in wartime.

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Notice of Concern (cont'd)

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Reset

The MRAP program is subject to MROC annual assessment that reviews the quantity of vehicles the Marine Corps will retain and sustain. In November 2016, the MROC approved the reset of 2,007 MRAPs, which will be assigned to the operational forces, pre-positioned stock, war reserve, and depot maintenance float allowance after the reset is completed. However, according to Marine Corps officials, the MRAP requirement is now projected to decrease from 2,007 to 520 vehicles over the next 5 years. As of April 2018, there are 437 MRAPs that have not been reset by contractors. Specifically, one contractor has not started the reset of 239 vehicles estimated to cost $[redacted] million and another contractor has requested $[redacted] million, in addition to the $35.2 million contract it received in September 2016, to complete ongoing work to reset 198 vehicles.

According to Marine Corps officials from CD&I and Marine Corps Logistics Command, the MRAPs stored at MCLB Barstow may not be operationally used before projected future reductions in the total MRAP vehicle requirement. In addition, a CD&I official stated that deferring the reset of the 239 vehicles is an acceptable near term risk based on projected program changes and other force modernization efforts. The CD&I official recommended that the I&L Assistant DC approve deferring the reset of the 239 vehicles until the next MROC assessment, which is expected to occur no later than the first quarter, FY 2019. On April 4, 2018, the I&L Assistant DC approved deferring the FY 2018 work for the 239 vehicles. With regard to the 198 vehicles that are partially completed, the contractor has requested an additional $[redacted] million to complete work on the contract it received in September 2016. It is our understanding that the Marine Corps has not made a decision on whether or not to fund this request in 2018 or to defer consideration of this request until the MROC meets in FY 2019.

Because Marine Corps officials have raised concerns regarding the need for these vehicles, we suggest that the Marine Corps consider either delaying the funding of the additional work on the 198 vehicles in progress until the MROC meets in FY 2019, or meet with the MROC in FY 2018. We also suggest that the MROC consider whether there is still a need to reset all 437 vehicles given the Marine Corps officials' statements that the MRAP requirement is projected to decrease the next 5 years. The remaining cost to complete the reset of these 437 vehicles is estimated at $70.9 million.[4]

Integration of Communications Upgrades

After reset is complete, the Marine Corps plans to upgrade the command, control, communications, computers, and intelligence (C4I) on all MRAPs, including the 915 vehicles that will be stored at the MCLB Barstow. The average cost for the C4I upgrade is $[redacted] per vehicle. According to CD&I and Marine Corps Logistics Command officials, if these vehicles received C4I upgrades now and were fielded in the future, they could require additional C4I upgrades due to changes in technology. CD&I officials stated that they are currently evaluating requirements and risk to determine whether the Marine Corps should continue the C4I upgrade on the vehicles in storage and plans to discuss this at the next MROC assessment, which is expected to occur no later than the first quarter, FY 2019. The Marine Corps is continuing to fund the C4I upgrades while it evaluates the requirements. The Marine Corps should consider deferring additional expenditures until after the MROC meets in FY 2019, or meet with the MROC in FY 2018. The Marine Corps estimates that the C4I upgrades for the 915 vehicles to be stored at MCLB Barstow will cost $[redacted] million. The Marine Corps also estimates that the average time to complete a C4I upgrade, depending on the MRAP variant, averages anywhere from 68 to 239 man-hours. If the Marine Corps decides not to complete the C4I upgrades, it would need to complete the upgrades before the MRAPs could be used.

[4] Total does not add due to rounding.

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Notice of Concern (cont'd)

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Level of Preservation and Storage

After the C4I upgrades are completed on the 915 MRAPs, the Marine Corps plans to preserve and store the upgraded 915 MRAPs at the MCLB Barstow. As of April 2018, the Marine Corps had not decided whether it will preserve all of the vehicles at level "A" or level "B." Level "A" is the least expensive option, at $5,624 per vehicle per year and will require 5 hours to be ready to ship. Level "B" is the most expensive, at $9,249 per vehicle per year and will require 3 hours to be ready to ship. According to CD&I officials, they plan to recommend level "A" preservation and storage during discussions at the next MROC assessment, which is expected to occur no later than the first quarter, FY 2019. There is a difference of $3.3 million per year to preserve the vehicles at level "A" rather than level "B." The Marine Corps currently plans to retain these vehicles for at least another 5 years, so it would cost $16.6 million less to store the vehicles at level "A" preservation.

Marine Corps Actions to Address Vehicles in Storage

In May 2018, we discussed MRAP reset, communication upgrade, and level of storage with CD&I, I&L, and Marine Corps Logistics Command officials. CD&I officials stated that they planned to discuss potential courses of action related to the MRAP with the MROC no later than the first quarter, FY 2019.

In order to ensure the Marine Corps is implementing current requirements, the CD&I DC and I&L DC should consider either deferring the funding of additional work until it meets with the MROC in FY 2019 or meet with the MROC in FY 2018 to determine whether spending funds for the reset and upgrade of the remaining MRAPs is essential to meeting Marine Corps requirements. In addition, the MROC should also consider the mission impact of the storage level for the MRAPs that are to be stored at MCLB Barstow.

We request that you provide us information explaining any actions you take or have taken to address the above discussed suggestions by July 18, 2018. Please contact [redacted] or [redacted].

Theresa S. Hull
Assistant Inspector General
Acquisition, Contracting, and Sustainment

~~FOR OFFICIAL USE ONLY~~

Combat Development and Integration Comments

DEPARTMENT OF THE NAVY
HEADQUARTERS, UNITED STATES MARINE CORPS
3300 RUSSELL ROAD
QUANTICO, VA 22134-5001

IN REPLY REFER TO:
4790
LID
13 JUL 18

From: Director, Logistics Integration Division, Capabilities Development Directorate, Combat Development and Integration
To: Inspector General, Department of Defense

Subj: POTENTIAL COST WITH THE MINE RESISTANT AMBUSH PROTECTED VEHICLE (MRAP)

Ref: (a) DOD IG Memorandum dtd 18 Jan 18
(b) DOD IG Memorandum dtd 2 Jul 18

Encl: (1) CD&I MRAP Review Announcement msg dtd 18 Apr 18
(2) ADC, I&L (LP) ltr dtd 4 Apr 18
(3) ADC, I&L (LP) ltr dtd 18 Jun 18
(4) MROC Decision Memorandum 24-2013 dtd 22 Mar 13

1. Purpose. To provide information to the Inspector General regarding MRAP requirements and actions that have been, or will be, taken to manage costs while maintaining our operational readiness.

2. Reference (a) announced the audit of Navy and Marine Corps Backup Aircraft and Depot Maintenance Float for Ground Combat and Tactical Vehicles. The audit objective was to determine if the service has sufficient depot maintenance float quantities for select tactical vehicles and included the MRAP family of vehicles as part of the assessment. Reference (b) notifies the Marine Corps of areas of concern, unrelated to depot maintenance float, that were identified during the audit and requests information of actions taken to address them.

3. The MRAP family of vehicles were rapidly developed and procured in response to an urgent need, during Operations Iraqi and Enduring Freedom, and they continue to be employed by deployed forces. The MRAP capability is reviewed annually by the Marine Requirements Oversight Council (MROC), as part of a larger Ground Combat and Tactical Vehicle strategy. The strategy and annual review process seek to maintain our combat readiness while minimizing unnecessary expenditure of limited resources. During the audit of depot float allowances we shared, with auditors, those aspects of our MRAP requirements that were under consideration for adjustment as part of the deliberate recurring review identified in enclosure (1). Actions taken, or pending, as part of our review are identified in the below paragraphs and should adequately address the areas of concern noted in reference (b).

a. Reset: Requirement review concluded that deferral of planned reset of 483 MRAP vehicles (239 MATVs, 46 CAT II Cougars, 198 CAT I Cougars) presented an acceptable near-term operational risk. The deferral of 239 MATVs and 46 Category II Cougars represent a cost avoidance of approximately $66.2M. The 198 Category I Cougars have been authorized for deferral but, because they involve contracted work in progress, final determination regarding termination of work is being evaluated by HQMC contracting officials. Detailed cost avoidance information is in development and will be the result of contracting decisions made in the best interest of the government. Any funding associated with reset deferral decisions will be reallocated to support depot lines on

Combat Development and Integration Comments (cont'd)

Subj: POTENTIAL COST WITH THE MINE RESISTANT AMBUSH PROTECTED VEHICLE (MRAP)

other critical combat systems. Enclosures (2) and (3) capture recommendations and decisions to defer reset.

b. Integration of communications: Requirement review concluded that subsystem integration on 601 MRAP vehicles planned for FY19 funding and execution, should be deferred. Deferral of integration is considered an acceptable near-term operational risk. Integration cost avoidance anticipated to be approximately $19.2M with exact cost to be determined after contract termination actions are completed. Enclosure (2) captures recommendation and decision to defer. Note: Audit area of concern identified opportunity to defer 915 vehicles planned for storage. Detailed requirements review determined that only 601 vehicles present a real opportunity for cost avoidance due to specific, by vehicle requirements, and in progress installation contract activities.

c. Level of preservation and storage: MRAP vehicles planned for placement into a depot storage program will be maintained in a Level A preservation status. The preservation and storage level remains aligned to the intent identified and published in paragraph 5.d of enclosure (4).

4. Deferral decisions identified within this response will be incorporated into the upcoming annual MROC requirement review planned for no later than 1st Qtr, FY19.

5. The point of contact for this matter is [redacted].

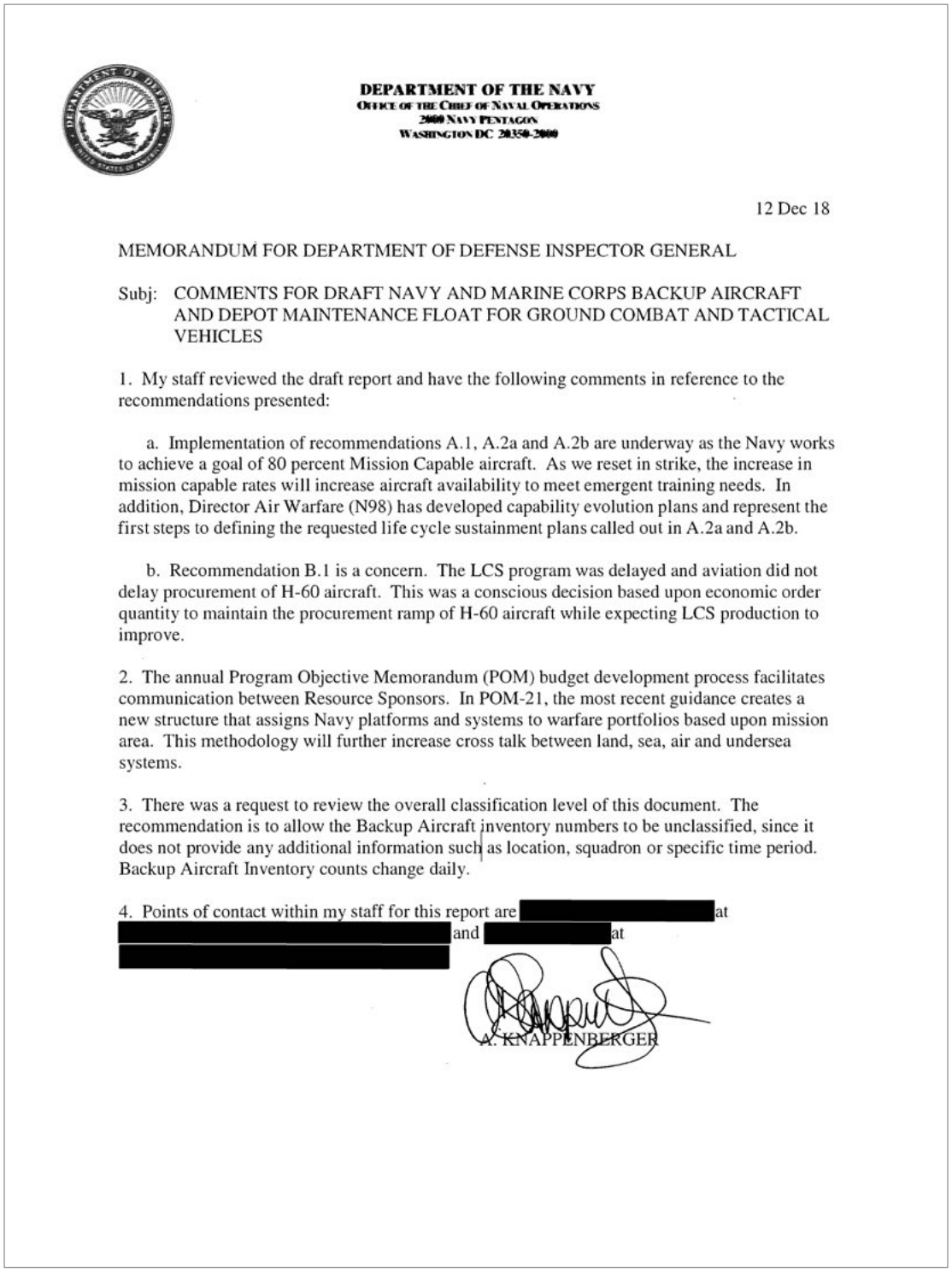
J. HULL
By direction

Copy to:
DMCS
CDD, CD&I
ADC I&L (LP)
MARCORLOGCOM
PEO LS

2

Management Comments

Office of Chief of Naval Operations, Air Warfare Division



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

12 Dec 18

MEMORANDUM FOR DEPARTMENT OF DEFENSE INSPECTOR GENERAL

Subj: COMMENTS FOR DRAFT NAVY AND MARINE CORPS BACKUP AIRCRAFT AND DEPOT MAINTENANCE FLOAT FOR GROUND COMBAT AND TACTICAL VEHICLES

1. My staff reviewed the draft report and have the following comments in reference to the recommendations presented:

a. Implementation of recommendations A.1, A.2a and A.2b are underway as the Navy works to achieve a goal of 80 percent Mission Capable aircraft. As we reset in strike, the increase in mission capable rates will increase aircraft availability to meet emergent training needs. In addition, Director Air Warfare (N98) has developed capability evolution plans and represent the first steps to defining the requested life cycle sustainment plans called out in A.2a and A.2b.

b. Recommendation B.1 is a concern. The LCS program was delayed and aviation did not delay procurement of H-60 aircraft. This was a conscious decision based upon economic order quantity to maintain the procurement ramp of H-60 aircraft while expecting LCS production to improve.

2. The annual Program Objective Memorandum (POM) budget development process facilitates communication between Resource Sponsors. In POM-21, the most recent guidance creates a new structure that assigns Navy platforms and systems to warfare portfolios based upon mission area. This methodology will further increase cross talk between land, sea, air and undersea systems.

3. There was a request to review the overall classification level of this document. The recommendation is to allow the Backup Aircraft inventory numbers to be unclassified, since it does not provide any additional information such as location, squadron or specific time period. Backup Aircraft Inventory counts change daily.

4. Points of contact within my staff for this report are [redacted] at [redacted] and [redacted] at [redacted]

A. KNAPPENBERGER

Headquarters, United States Marine Corps

DEPARTMENT OF THE NAVY
HEADQUARTERS, UNITED STATES MARINE CORPS
3000 MARINE CORPS PENTAGON
WASHINGTON, DC 20350-3000

IN REPLY REFER TO:
7500
DMCS-A
19 Dec 18

From: Head, Audit Coordination, Office of the Director, Marine Corps Staff
To: Program Director, Acquisition, Contracting, and Sustainment, Office of the Inspector General, U.S. Department of Defense

Subj: NAVY AND MARINE CORPS BACKUP AIRCRAFT AND DEPOT MAINTENANCE FLOAT FOR GROUND COMBAT AND TACTICAL VEHICLES (DODIG AUDIT PROJECT NO. D2018-D000AT-0091.000)

Ref: (a) DODI 7650.03, Follow-up on GAO, DODIG, and Internal Audit Reports
(b) DODIG Memorandum of November 16, 2018 to NAVINSGEN; DC, I&L; DC, CD&I; and CMDR, MCLC

1. Reference (a) requires prompt actions to resolve open audit recommendations. Reference (b) provided the subject official draft audit report containing recommendations to the Navy and Marine Corps.

2. A review of the DODIG draft audit report was completed by the Marine Corps Aviation Department, Marine Corps Combat Development & Integration, Marine Corps Installations and Logistics Department, Marine Corps Logistics Command, and the Marine Corps Systems Command. The Marine Corps concurs with the technical accuracy and content of the report.

3. In its recommendation no. C.1 from the report, DODIG recommended that the Deputy Commandant, Installations and Logistics require Marine Corps installations and logistics officials to initiate and complete depot maintenance float allowance annual reviews and approve all depot maintenance float allowance authorization changes according to Marine Corps Order 5311.1E.

4. The Deputy Commandant, Installations and Logistics concurs with recommendation no. C.1 from the report. The 2018 Depot Maintenance Float Allowance (DMFA) annual review is currently in staffing. The 2019 DMFA annual review will be initiated during May 2019.

Headquarters, United States Marine Corps (cont'd)

Subj: NAVY AND MARINE CORPS BACKUP AIRCRAFT AND DEPOT MAINTENANCE FLOAT FOR GROUND COMBAT AND TACTICAL VEHICLES (DODIG AUDIT PROJECT NO. D2018-D000AT-0091.000)

5. We appreciate the opportunity to respond to the report.

6. For questions regarding this response, I can be reached at [redacted], [redacted], [redacted] or [redacted].

CHARLES K. DOVE

Copy to:
WHS-ESD (IG Affairs)
NAVINSGEN (N14)
IGMC
CMC (CL)
DC, P&R (MCMICP)
DC, I&L
DC, AVN
DC, CD&I
CMDR, MCLC
CMDR, MCSC

2

Naval Air Systems Command

DEPARTMENT OF THE NAVY
NAVAL AIR SYSTEMS COMMAND
RADM WILLIAM A. MOFFETT BUILDING
47123 BUSE ROAD, BLDG 2272
PATUXENT RIVER, MARYLAND, 20670-1547

7540
Ser AIR-00G4A/081
18 Dec 18

From: Commander, Naval Air Systems Command
To: Naval Inspector General, Audit Liaison and Follow-Up Division (N4)

Subj: DODIG DRAFT REPORT ON NAVY AND MARINE CORPS BACKUP AIRCRAFT AND DEPOT MAINTENANCE FLOAT FOR GROUND COMBAT AND TACTICAL VEHICLES (PROJECT NUMBER D2018-D000AT-0091.000); RESPONSE TO

Ref: (a) DODIG Memo of 16 Nov 18

Encl: (1) Naval Air Systems Command Comments to Subject Draft Report

1. Reference (a) submitted subject report for our review and comments. Accordingly, enclosure (1) contains our formal management response to the subject report.

2. Please refer questions to [redacted] at [redacted] or [redacted] at [redacted].

W. A. McCONVEY
Inspector General

Copy to:
AIR 6.6
PEO-A
PEO-T
PMA-273
PMA-265
PMA-299

Naval Air Systems Command (cont'd)

DEPARTMENT OF THE NAVY RESPONSE TO
DODIG DRAFT AUDIT REPORT ON
"NAVY AND MARINE CORPS BACKUP AIRCRAFT AND DEPOT MAINTENANCE FLOAT FOR GROUND COMBAT AND TACTICAL VEHICLES"
PROJECT # D2018-D000AT-0091.00
DATED NOVEMBER 16, 2018

Finding A: Insufficient Quantities of Aircraft
The Navy and Marine Corps did not have a sufficient quantity of operational F/A-18 and T-45 aircraft available to replace all aircraft requiring depot maintenance. Specifically, 245 F/A-18 and 22 T-45 backup aircraft were in a non-operational status. The insufficient quantity of available backup aircraft occurred because the Navy squadrons and training wings used the F/A-18 E-F and T-45 backup aircraft inventory to transition squadrons to newer models and as attrition reserve inventory. In addition, the Navy and Marine Corps extended the planned service life of the F/A-18 and T-45 aircraft. While Navy and Marine Corps pilots were receiving the minimum amount of training prior to deployment, a Navy official stated it was a problem that pilots barely obtain the minimum amount of training. In addition, the Navy and Marine Corps could experience a future shortfall of trained pilots, potentially impacting mission readiness if the aircraft shortages continue.

NAVAIR Comment (PMA-265): *Concur.*

NAVAIR Comment (PMA-273): *Concur. Aircraft attrition as well as cyclic organization and depot level maintenance events will have an increasing effect on T-45 availability as the aircraft approaches the end of its service life.*

Recommendation A.2.a.: Recommend that the Commander of Naval Aviation Systems Command require the T-45 program office to prepare a life-cycle sustainment plan that includes changes to the expected service life.

NAVAIR Comments: *Concur*

Expected completion date: *31 December 2019*

Recommendation A.2.b.: Recommend that the Commander of Naval Aviation Systems Command require the F/A-18 and T-45 program offices to implement a plan to incorporate future program changes, as necessary. The plan should include the effects of delayed replacement programs and extension of the service life on aircraft maintenance, spare parts, and aircraft inventory management during replacement aircraft acquisition planning.

NAVAIR Comments: *Concur*

Expected completion date: *31 December 2019*

Enclosure

Acronyms and Abbreviations

AAV	Assault Amphibious Vehicle
BAA	Backup Aircraft Authorization
CD&I	Combat Development and Integration
CNAF	Commander, Naval Air Forces
CNATRA	Chief of Naval Air Training
DECKPLATE-AIRRS	Decision Knowledge Programming for Logistics Analysis and Technical Evaluation and Aircraft Inventory and Readiness Reporting System
DMFA	Depot Maintenance Float Allowance
GCTV	Ground Combat and Tactical Vehicles
I&L	Installations and Logistics
LAV	Light Armored Vehicle
LCS	Littoral Combat Ship
LOGCOM	Marine Corps Logistics Command
MRAP	Mine Resistant Ambush Protected
MROC	Marine Requirements Oversight Council
N9	Warfare Systems
N98	Director, Air Warfare
OPNAV	Office of the Chief of Naval Operations
RAM/RS	Reliability, Availability, Maintainability/Rebuild to Standard
SLEP	Service Life Extension Program
TFSMS	Total Force Structure Management System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U.S. Department of Defense

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Congressional Liaison
703.604.8324

Media Contact
public.affairs@dodig.mil; 703.604.8324

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4800 Mark Center Drive
Alexandria, Virginia 22350-1500
www.dodig.mil
Defense Hotline 1.800.424.9098