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April 2018

MILITARY PERSONNEL

DOD Needs to Reevaluate Fighter Pilot Workforce Requirements

Accessible Version

GAO-18-113

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GAO Highlights

Highlights of GAO-18-113, a report to the Committee on Armed Services, U.S. Senate

Why GAO Did This Study

Fighter pilots operate aircraft that are critical to achieving and maintaining air dominance during combat operations. The military services invest significant time and funding to train, compensate, and retain fighter pilots. According to Air Force officials, it costs between $3-$11 million and takes approximately 5 years to develop an individual fighter pilot to lead combat missions.

Senate Report 114-255 included a provision for GAO to review the Department of Defense's (DOD) management of the fighter pilot workforce. GAO's report (1) assesses the extent to which the military services had differences in the number of fighter pilots compared to authorizations, and describes any contributing factors as well as initiatives to address the differences, and (2) assesses the extent to which the military services had reevaluated squadron requirements for the number of fighter pilots needed, including consideration of UAS pilot requirements.

GAO analyzed military service personnel data, documentation on service initiatives to address factors contributing to fighter pilot shortages, and service documentation of requirements; met with a non-generalizable sample of fighter pilots at seven locations; and interviewed DOD and service officials.

What GAO Recommends

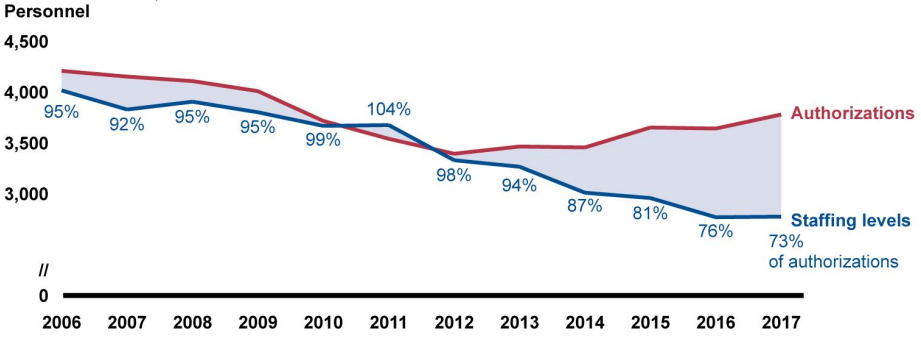
GAO recommends that the Air Force, the Navy, and the Marine Corps reevaluate fighter pilot squadron requirements. DOD concurred with the recommendations.

View GAO-18-113. For more information, contact Brenda S. Farrell at (202) 512-3604 or farrellb@gao.gov.

What GAO Found

The Air Force, the Navy, and the Marine Corps had gaps between the actual numbers of fighter pilots and authorizations (i.e. funded positions) in fiscal years (FY) 2013 through 2017. In FY 2017 the Air Force's gap was the widest at 27 percent of authorizations (see fig. below) and is projected to continue through FY 2023. The Marine Corps' gap grew from 6 percent in FY 2006 to 24 percent in FY 2017; it is concentrated in fighter pilots below the rank of major. While the Navy did not have comparable data, it had a gap at fighter pilots' first operational tours that grew from 12 percent in FY 2013 to 26 percent in FY 2017, and Navy officials stated it could increase through mid-2019. Service officials attributed these gaps to aircraft readiness challenges, reduced training opportunities, and increased attrition of fighter pilots due to career dissatisfaction. To help increase fighter pilot numbers, the military services are taking actions, including increasing the amounts of financial incentives to retain pilots.

Air Force's Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

The military services have not recently reevaluated squadron requirements to reflect increased fighter pilot workload and the emergence of unmanned aerial systems (UAS). According to service guidance, squadron requirements are to be reviewed on a 2-year schedule and to be updated as conditions change (in June 2017 the Navy revised its guidance to extend its schedule from 2 years to 5 years). However, service officials acknowledged that they have not updated all squadron requirements within the last 2 years. These officials stated that the requirements have not been reevaluated because existing conditions do not warrant the change. However, fighter pilots and squadron leaders interviewed at locations GAO visited consistently stated that the typical workload has significantly increased in recent years due to, among other things, changes in fighter aircraft tactics and technology and reductions to administrative support in squadrons. Further, the military services have not assessed the effect of increased reliance on UAS on fighter pilot requirements. The Air Force's vision for UAS notes that systems will work in tandem with cockpit-operated aircraft and that autonomous technologies will potentially lead to personnel efficiencies. Without re-evaluating squadron requirements to reflect current and emerging conditions, the nature of the gap may be inaccurate and thus make it difficult for the military services to target strategies to meet their personnel needs.

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Abbreviations

DOD	Department of Defense
UAS	unmanned aerial system

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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Washington, DC 20548

April 11, 2018

The Honorable John McCain
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Department of Defense (DOD) relies on fighter pilots to perform an array of missions that are critical to its ability to successfully execute its national security mission.[1] Developing fighter pilots requires a significant investment of time and funding. According to Air Force officials, a fighter pilot requires approximately 5 years of training to be qualified to lead flights, at a cost of between about $3 million to $11 million depending on the specific type of aircraft.[2] Retaining qualified pilots is important not only to ensure that operational requirements can be met, but also to recoup the substantial investments the military services make in training their pilots.

Since 2001, we have identified the strategic management of human capital as a high-risk issue because of the mission-critical skills gaps within the federal workforce that pose a high risk to the nation by impeding the government from cost-effectively serving the public and achieving results.[3] In 2017, we reported that the military services implemented retention bonuses differently for pilots of different types of aircraft, and that their implementation approaches generally varied from year to year.[4] We recommended that DOD clarify guidance regarding the extent to which personnel performance should be incorporated into

[1] For the purpose of our review we defined *fighter pilot* as a cockpit pilot of a tactical aircraft, i.e. fixed-wing, jet-powered fighter and attack airplanes. The Army does not operate fighter aircraft. Pilots of unmanned aerial systems were not included in our review.

[2] These totals do not include the cost of initial training provided to all servicemembers, which involve additional time and costs.

[3] GAO, *High Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, GAO-17-317 (Washington, D.C.: Feb. 15, 2017).

[4] GAO, *Military Compensation: Additional Actions Are Needed to Better Manage Special and Incentive Pay Programs*, GAO-17-39 (Washington, D.C.: Feb. 3, 2017).

retention decisions—including the use of bonuses to retain pilots. DOD concurred with the recommendation, but as of December 2017 had not yet implemented changes in response.

Senate Armed Services Committee Report 114-255, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2017, included a provision for us to review DOD's management of the fighter pilot workforce.[5] For our report, we (1) assessed the extent to which the military services had differences in the number of fighter pilots compared to authorizations, and described any contributing factors as well as initiatives to address the differences and (2) assessed the extent to which the military services had reevaluated squadron requirements for the number of fighter pilots needed, including consideration of unmanned aerial system (UAS) pilot requirements.

For objective one, we compared "authorizations"—specifically, those positions authorized and funded by Congress for fighter pilots in the active and reserve components of the Air Force, the Navy, and the Marine Corps—with the corresponding staffing levels (i.e., the actual number of pilots available to staff those positions) in those military services.[6] For each of the military services, we also compared authorizations with staffing levels of all fixed-wing, cockpit-operated communities (hereafter referred to as fixed-wing communities). We did not include the Army in our review because it does not operate fighter aircraft.

For the Air Force and the Marine Corps, we compared fighter pilot staffing levels for the active and reserve components to authorized positions for fiscal years 2006 through 2017,[7] and we also obtained and analyzed projections for these data for fiscal years 2018 through 2023. We also

[5] S. Rep. No. 114-255 (2016)

[6] The military services periodically review and update the human resources they determine are needed to accomplish specific jobs, workloads, missions and programs, and state those figures (known as "requirements") in staffing documents. Once such a requirement is funded it becomes part of the military service's end strength as an "authorization." The number of authorizations is often smaller than the requirements set out by the military services, and the actual staffing levels of various positions within the military services are often smaller than the number of authorizations.

[7] Operational positions include flying positions, and certain non-flying positions that directly support combat operations. Non-operational positions are generally non-flying positions, some of which can be filled by other types of military service officers.

compared fighter pilot staffing levels for Air Force and Marine Corps active components with operational authorized positions. The Navy does not separate non-operational fighter pilot authorizations from authorizations for other pilots, and therefore we were unable to compare Navy fighter pilot staffing levels with authorizations as we did for the Air Force and the Marine Corps. We instead analyzed staffing levels for Navy fixed-wing communities in the active component for fiscal years 2011 through 2017, and compared pilot staffing levels to authorizations for the three career milestones that Navy officials told us they use to monitor and manage their fixed-wing pilot communities for fiscal years 2013 through 2017. These milestones are first operational tour, mid-career Department Head, and Command. We also analyzed differences between staffing targets and staffing levels for the Navy Reserve fighter pilot community for fiscal year 2017, the only year of data available. We also analyzed Navy retention data for mid-career pilots eligible for Department Head assignments in the same communities for fiscal years 2013 through 2017.[8]

To assess the reliability of the data we obtained, we reviewed corroborating documentation, analyzed the data for inconsistencies, and interviewed service officials about the reliability of the data. We determined that the data were sufficiently reliable to describe the trends in personnel staffing levels and authorizations for the time period included in our scope.

To discuss factors that may have contributed to differences in the number of fighter pilots compared to authorizations, we met with DOD and service officials and reviewed service documentation regarding the factors officials identified. We also held discussion groups with a non-generalizable sample of fighter pilots and squadron leaders to obtain their views on the factors that they believe have contributed to low numbers of fighter pilots. To identify any initiatives the military services had taken or planned to address factors contributing to low numbers of fighter pilots, we interviewed service officials and reviewed documentation related to relevant military service initiatives.

[8] Department Head refers to an operational leadership tour for different aspects of squadron management, including maintenance and squadron operations. Retention data for the Department Head milestone are made available in annual aviation continuation pay reports to Congress. Fiscal year 2018 data will be available in fiscal year 2019.

For objective two, we reviewed Air Force, Navy, and Marine Corps guidance to determine the frequency that fighter pilot squadron requirements are to be reviewed. We then reviewed service documentation and interviewed service officials to determine the extent to which these requirements had been reviewed on schedule. We also reviewed service documentation regarding the planned mix of aviation platforms for future operations and discussed with service officials the extent to which these plans are incorporated into forecasts of fighter pilot squadron requirements. Our scope and methodology is described in detail in appendix I.

We conducted this performance audit from November 2016 to April 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.

Background

Role of Fighter Pilots

Fighter pilots staff both operational and non-operational positions, and fighter pilots alternate between these positions throughout their career. Operational positions include both flying (i.e., combat pilot or instructor pilot positions) and non-flying positions, such as a close air support duty officer in an Air Operations Center or an air controller in a ground infantry unit. In flying positions, fighter pilots operate aircraft that are critical to achieving and maintaining air dominance during combat operations and include Air Force, Navy, and Marine Corps fixed-wing fighter and attack aircraft with air-to-air, air-to-ground, and electronic warfare missions. These aircraft operate during the first days of a conflict to penetrate enemy air space, defeat air defenses, and achieve air dominance, allowing follow-on ground, air, and naval forces freedom to operate within the battle space. Once air dominance is established, fighter aircraft continue to strike ground targets for the remainder of the conflict. Some fighter aircraft are also essential to protecting the homeland by responding to potential airborne and ground-based threats.

Fighter pilots are assigned a variety of tasks when they are in an operational squadron. As well as studying for flights, flying, and

debriefing, fighter pilots must also perform other squadron duties, such as coordinating squadron travel to external training locations, scheduling daily flights, or overseeing squadron maintenance departments. In addition to these duties, fighter pilots are required to complete common military training (i.e., training that is required for all military personnel and is not linked to a particular occupation). In May 2017, we reported that common military training comprises more than half of mandatory training requirements in the military services (not including additional training that the military services may require for specific groups of servicemembers, such as fighter pilots).[9]

Non-operational positions are generally non-flying positions and include assignments to headquarters or combatant command positions. Certain non-operational positions can only be filled by qualified pilots. For example, certain positions require fighter pilots due to the need for specialized technical knowledge, such as writing operational manuals for fighter aircraft. Other non-operational positions are more general in nature and are divided among officer communities in a military service. For example, Navy officials told us that certain shore assignments—positions that do not involve deployment—can be staffed by officers from aviation, submarine, or surface warfare communities.

Aircraft Operated by Fighter Pilots

DOD's current fighter aircraft fleet is comprised of both legacy and new aircraft (see fig. 1). The legacy aircraft include Air Force F-16, F-15, A-10, and F-22A and Navy and Marine Corps F/A-18A-D, EA-6B, and AV-8B.[10] Most of these aircraft were purchased in the 1970s and 1980s and are more than 25 years old on average. DOD has been recapitalizing this aging legacy fleet by acquiring and fielding new aircraft, namely the Navy's F/A-18E/F and EA-18G and the joint service F-35. The Departments of the Air Force and the Navy are operating many of their fixed-wing aircraft well beyond their original designed service lives, and some of these legacy aircraft are confronted with sustainment challenges that affect their availability. In 2017, senior Air Force and Navy officials

[9] GAO, *DOD Training: DOD Has Taken Steps to Assess Common Military Training*, GAO-17-468 (Washington, D.C.: May 23, 2017).

[10] In this report, we define "legacy aircraft" as those fixed-wing aircraft that are currently in the operations and support phase of the acquisition lifecycle and generally are no longer in production.

testified before the House Armed Services Committee regarding, among other things, the maintenance and sustainment issues relating to aging aircraft that are affecting the readiness of their forces.[11]

[11] See *The State of the Military*: Hearing before the House Committee on Armed Services, 115th Congress (Feb. 7, 2017) (statements of Admiral William F. Moran, Vice Chief of Naval Operations, and General Stephen W. Wilson, Vice Chief of Staff of the Air Force) and *Aviation Readiness: What's the Flight Plan?*: Hearing Before the Subcommittee on Readiness of the House Committee on Armed Services, 115th Congress (Nov. 9, 2017) (statements of Vice Admiral Troy M. Shoemaker, Commander, Naval Air Forces, and Lieutenant General Steven R. Rudder, Deputy Commandant for Aviation, United States Marine Corps).

Figure 1: Department of Defense Fighter Aircraft

AV-8B Harrier

A-10 Thunderbolt II

EA-6B Prowler

F-15 Eagle

F-16 Fighting Falcon

F/A-18 Hornet

F-22 Raptor

F-35 Lightning II

Source: Defense Video Imagery Distribution System. | GAO-18-113

Note: The graphic does not include aircraft used for training purposes, including aircraft that function as adversaries during air-to-air combat training.

Processes for Determining and Staffing Fighter Pilot Authorizations

According to Air Force, Navy, and Marine Corps guidance, the military services are to determine personnel requirements for military units.[12] Service officials told us that this process includes squadron requirements—that is, the number of operational positions in a fighter pilot squadron that a military service has determined should be staffed by a qualified fighter pilot. Squadron requirements are primarily based on the missions the squadrons are expected to fulfill, and the military services use a variety of inputs to determine fighter pilot squadron requirements. These inputs include the projected operations of fighter squadrons, analyses of the amount of workload in the squadrons, the number of aircraft assigned to the squadrons, and the planned ratio of fighter pilots to aircraft. The military services are to determine the required number of fighter pilots to staff squadrons and meet operational mission needs and to document these in squadron staffing documents.[13] The military services also determine the rank that pilots should have when staffing specific positions in a squadron—for example, Marine Corps F/A-18 squadron staffing documents specify the rank that should be held by pilots leading specific departments such as those for safety, operations, and maintenance. According to service officials, the military services then staff squadron requirements to the extent possible based on the number of those requirements funded by Congress and the number of trained and qualified personnel available to be staffed to those positions (see fig. 2). We refer to these funded positions as authorizations. Military service workforce planning documents acknowledge that, after this process, a squadron's staffing level may be lower than the established squadron requirements—a readiness risk that the military services manage by assigning a higher priority to the staffing of certain positions, such as those in deployed squadrons.

[12] Air Force Instruction (AFI) 38-201, *Management of Manpower Requirements and Authorizations* (Jan. 30, 2014); Office of the Chief of Naval Operations Instruction (OPNAVINST) 1000.16L, *Navy Total Force Manpower Policies and Procedures* (June 24, 2015); Marine Corps Order (MCO) 5311.1E, *Total Force Structure Process* (Nov. 18, 2015).

[13] In addition, service officials told us that each of the military services have procedures to determine the number of pilots required to staff non-operational positions, for example in headquarters organizations.

Figure 2: Explanation of Squadron Requirements, Authorizations, and Pilot Staffing Levels

Source: GAO analysis of Department of Defense information. | GAO-18-113

The military services vary in how they define when gaps between authorizations and staffing levels become a shortage. Specifically, fighter pilot staffing levels of 85 to 99 percent of authorizations could be considered a shortage, depending on the military service. For example, Air Force officials told us that their established practice is that pilot communities with less than 100 percent of authorizations are considered to be insufficiently staffed. Navy officials told us that they have a shortage when they are unable to fully staff deploying squadrons. Marine Corps personnel documents reflect that Marine Corps communities with less than 85 percent of authorizations are considered "unhealthy."

The process of staffing fighter pilots is managed in the Air Force by the Air Force Personnel Center, in the Navy by the Navy Personnel Command, and in the Marine Corps by the Deputy Commandant for Manpower and Reserve Affairs. According to service guidance, the Secretaries are to review squadron requirements, and this review is required every 2 years for the Air Force and the Marine Corps and every 5 years for the Navy.[14] Further, DOD guidance states that staffing requirements are driven by workload and shall be established at the minimum levels necessary to accomplish mission and performance objectives.[15]

[14] AFI 38-201; OPNAVINST 1000.16L; OPNAVINST C3501.2L, Mission Areas and Required Operational Capability/Projected Operational Environment Statements (June 30, 2017) (C); MCO 5311.1E.

[15] DOD Directive 1100.4, *Guidance for Manpower Management* (Feb. 12, 2005).

The Military Services Had Fewer Fighter Pilots Than Authorizations Due to a Variety of Contributing Factors; Initiatives Are Underway to Increase Fighter Pilot Staffing Levels

According to Air Force, Navy, and Marine Corps data, each military service had fewer fighter pilots than authorizations from fiscal years 2013 through 2017, and the Air Force and the Marine Corps project that these gaps will continue for several years. According to service officials, because of low numbers of fighter pilots, the military services are unable to staff all operational fighter pilot positions. According to the military services, deploying squadrons have been fully staffed with fighter pilots, due to staffing approaches that include extending deployments and augmenting deployed squadrons with fighter pilots from other squadrons. Service officials identified multiple factors that have led to low numbers of fighter pilots, including challenges in training and retaining fighter pilots. To increase fighter pilot numbers, the military services are taking a variety of actions.

The Air Force, the Navy, and the Marine Corps Had Fewer Fighter Pilots Than Authorizations

According to Air Force, Navy, and Marine Corps data, each military service had fewer fighter pilots than authorizations (i.e., funded positions) from fiscal years 2013 through 2017.[16] Specifically, the Air Force and the Marine Corps had fewer fighter pilots than authorizations for most years from fiscal years 2006 through 2017. The magnitude of these gaps has grown since fiscal year 2006 and is projected to continue through at least fiscal year 2023. The Navy had fewer fighter pilots than authorizations in fiscal years 2013 through 2017. According to service officials, these gaps between fighter pilot numbers and authorizations have prevented the military services from fully staffing operational positions, including in non-deployed squadrons and training units.

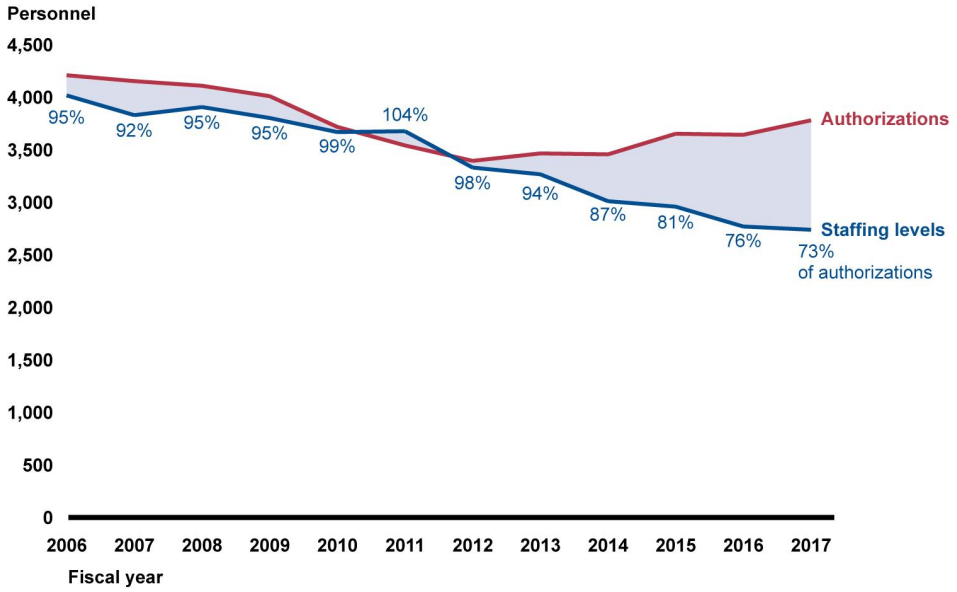
[16] The analysis results presented in this section are for active-duty fighter pilots only. We found that the reserve components in each service also had fewer fighter pilots than authorizations. See appendixes II through IV for a more detailed discussion of pilot staffing levels for both the active and reserve components in the Air Force and the Marine Corps, and the active component of the Navy.

The Air Force Generally Had Fewer Fighter Pilots Than Authorizations Since Fiscal Year 2006, Including for Operational Positions Since Fiscal Year 2014

According to Air Force pilot staffing level and authorizations data for fiscal years 2006 through 2017, the Air Force had fewer fighter pilots than authorizations for 11 of 12 years from fiscal years 2006 through 2017. This gap grew from 192 fighter pilots (5 percent of authorizations) in fiscal year 2006 to 1,005 (27 percent) in fiscal year 2017. According to briefing documents prepared by the Air Force, this gap is concentrated among fighter pilots with fewer than 8 years of experience.[17] The Air Force forecasts that the fighter pilot gap will persist over time, even as the Air Force takes steps to train more fighter pilots and improve retention. Figure 3 shows the Air Force fighter pilot staffing levels and authorizations for fiscal years 2006 through 2017. For information on trends for all Air Force fixed-wing aircraft pilot communities, see appendix II.

[17] Headquarters Air Force (Operations, Plans, and Requirements), *Fighter Enterprise Redesign* (Jan. 10, 2017).

Figure 3: Air Force's Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data, the Air Force generally had sufficient fighter pilots to staff operational positions for fighter pilots for fiscal years 2006 through 2013. Air Force officials added that during that period, Air Force fighter pilot gaps were generally limited to non-operational positions, such as staff assignments at Air Force headquarters or combatant commands. However, our analysis found that the Air Force has been unable to fully staff operational positions since fiscal year 2014. The gap between staffing levels and operational positions increased from 39 fighter pilots (1 percent of authorizations) in fiscal year 2014 to 399 (13 percent) in fiscal year 2017.

The Navy Had Fewer Fighter Pilots Than Authorizations for Operational Positions in Fiscal Years 2013 through 2017

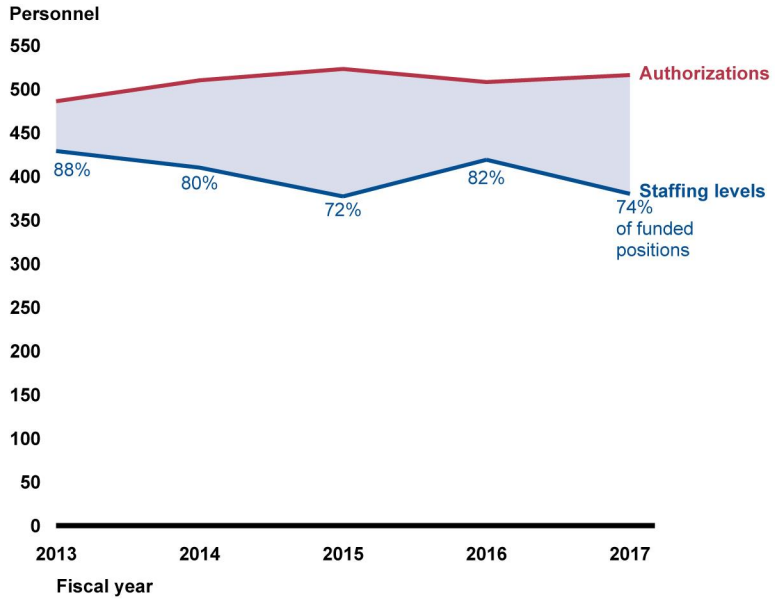
According to Navy fighter pilot staffing levels and authorizations data for fiscal years 2013 through 2017, the Navy had fewer fighter pilots than

authorizations for each of these fiscal years.[18] Specifically, in fiscal year 2013 the Navy had a gap of 57 fighter pilots (12 percent) at the first tour milestone (i.e., a fighter pilot's first operational tour at sea completed between 3 and 6 years of service), and this gap grew to 136 fighter pilots (26 percent) in fiscal year 2017 (see fig. 4).[19] Navy officials told us that they believe current gaps in the fighter pilot community could increase through mid-2019. For information on trends for all Navy fixed-wing aircraft pilot communities, see appendix III.

[18] We were unable to compare Navy data on total authorizations and staffing levels for Navy fighter pilots because, unlike the Air Force and the Marine Corps, the Navy does not fully allocate non-flying assignments to specific communities. As a result, we limited our analysis to comparing authorizations and staffing levels for three career milestones. Further, we were unable to compare the Navy's fighter pilot staffing levels to authorizations for future years because the Navy does not fully allocate future authorizations by pilot community. However, Navy officials provided an aggregate forecast of authorizations for all pilots and projected staffing levels by pilot community through fiscal year 2023.

[19] We report Navy fighter pilot authorizations and staffing levels for the first tour milestone because Navy officials told us that this is the only milestone that cannot be staffed with other types of Naval aviators. We report data for the other two milestones (Department Head and Command) in appendix III.

Figure 4: Navy Fighter Pilot First Operational Tour Actual Staffing Levels Compared with Authorizations, Fiscal Years 2013-2017



Source: GAO analysis of Navy data. | GAO-18-113

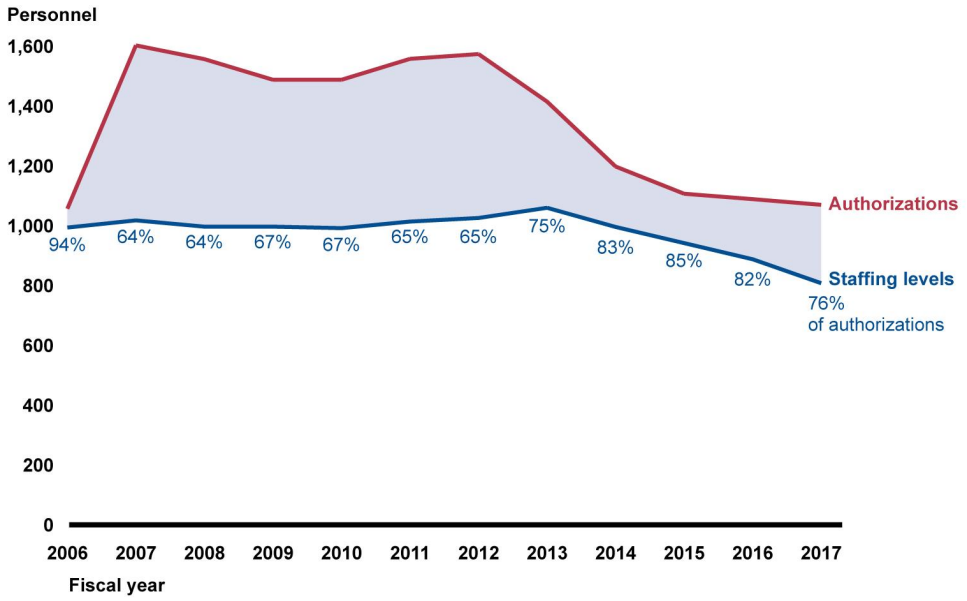
The Marine Corps Had Fewer Fighter Pilots Than Authorizations for Fiscal Years 2006 through 2017, Including for Operational Positions Since Fiscal Year 2016

According to Marine Corps pilot staffing levels and authorizations data for fiscal years 2006 through 2017, the Marine Corps had fewer fighter pilots than authorizations during that time frame. This gap grew from 63 fighter pilots (6 percent of authorizations) in fiscal year 2006 to 262 (24 percent) in fiscal year 2017. Further, according to Marine Corps data, the gap is concentrated in the Marine Corps' junior fighter pilot population (i.e., those fighter pilots below the rank of Officer-4—a major).[20] The Marine Corps forecasts that the fighter pilot gap will decrease over time as the Marine Corps phases out legacy aircraft and takes steps to improve retention. Figure 5 shows the Marine Corps active component fighter pilot staffing levels and authorizations for fiscal years 2006 through 2017. For

[20] The Marine Corps refers to officers between the rank of Officer-1 and Officer-3 as "company grade officers" (i.e., lieutenants and captains), and officers between the rank of Officer-4 and Officer-5 as "field grade officers" (i.e., majors and lieutenant colonels). In this report, we refer to these groups as junior and senior pilots, respectively.

information on trends for all Marine Corps fixed-wing aircraft pilot communities, see appendix IV.

Figure 5: Marine Corps' Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

In addition, Marine Corps data showed that the Marine Corps was unable to fully staff fighter pilot operational positions since fiscal year 2016. The gap between staffing levels and operational positions increased from 12 fighter pilots (1 percent of authorizations) to 57 (7 percent) in fiscal years 2016 through 2017.

The Military Services Used Various Staffing Approaches to Mitigate the Impact of Low Numbers of Fighter Pilots on Deploying Squadrons

Although all of the military services had fewer fighter pilots than authorizations in fiscal years 2013 through 2017, service officials stated that deploying squadrons have been fully staffed with fighter pilots. Service officials reported using various approaches to continue to fully staff deploying fighter squadrons, including (1) prioritizing staffing fighter pilots to flying positions that require fighter pilot-specific technical skills; (2) using senior pilots to staff junior positions; and (3) having pilots deploy

for longer and more frequently than planned, including on deployments with other squadrons.[21] For example, Navy officials told us that approaches such as extending fighter pilots' deployments allowed them to reduce the fiscal year 2017 first tour fighter pilot gap from 136 pilots (26 percent) to 75 pilots (15 percent).

However, squadron leaders and fighter pilots told us that these approaches are having a negative impact on the fighter pilot workforce. Specifically, squadron leaders and fighter pilots told us that the high pace of operations for senior fighter pilots has limited their availability to train junior pilots, which has constrained the military services' ability to increase the number of pilots with specific qualifications. In addition, fighter pilots told us that increased frequency of individual deployments cause instability for their families and lead to career dissatisfaction. Additionally, as we have previously reported, a high tempo of operations has increased the challenge of aviation squadrons to rebuild readiness. For example, according to Air Force officials, high deployment rates for Air Force squadrons have resulted in less time for squadrons to complete their full training requirements because high deployment rates mean that there are fewer aircraft available for training at home stations.[22]

Service officials report that they can also mitigate low numbers of fighter pilots by leveraging surpluses in other pilot communities. For example, as outlined in Air Force documents supporting pilot retention bonuses, the Air Force has staffed mobility pilots (i.e., cargo transport and aerial refueling pilots) to instructor pilot positions for certain basic flying training that would otherwise be staffed by fighter pilots. The Navy can also staff certain Department Head positions designated for fighter pilots with non-pilot aviators from that community.[23] According to military service data, fighter pilot communities generally have the largest gaps among all military fixed-wing pilot communities. For example, in fiscal year 2017 the

[21] In 1999, we reported that the military services had similar challenges meeting authorizations for all pilots—not just fighter pilots—and were using similar staffing approaches to meet authorizations. We recommended that DOD reassess requirements and consider using non-pilot personnel to staff non-operational positions. DOD partially concurred with the recommendation, and the Air Force implemented it by using personnel other than active duty pilots to staff pilot positions.

[22] GAO, *Military Readiness: DOD's Readiness Rebuilding Efforts May Be at Risk without a Comprehensive Plan*, GAO-16-841 (Washington, D.C.: September 7, 2016).

[23] The Navy refers to non-pilot aviators as Naval Flight Officers. These officers are responsible for navigation or weapon systems on cockpit-operated aircraft.

Air Force had 73 percent of the fighter pilots it needed, while the bomber community, which had the second largest gap among Air Force fixed-wing pilot communities, had 85 percent of the pilots it needed.

Service Officials Cited Multiple Factors That Have Contributed to Low Numbers of Fighter Pilots

According to service officials, squadron leaders, and fighter pilots, multiple inter-related factors have reduced each military service's number of fighter pilots. Factors cited include reductions to active duty end strength, aircraft readiness challenges, and declining retention.

Reductions to Active Duty Military End Strength

Reductions to active duty military end strength have contributed to reductions in fighter pilot staffing levels. Service officials told us that reductions to military service end strength targets as part of the 2008 drawdown of forces in Iraq and Afghanistan and funding reductions related to the Budget Control Act of 2011 led to reductions in the fighter pilot workforce.[24] For example, the Air Force offered 54 fighter pilots early retirement incentives in fiscal years 2014 through 2015, while the Marine Corps offered 49 fighter pilots early retirement options between fiscal years 2013 through 2016. Further, as we have previously reported, the Air Force used fighter pilots to meet the initial demand for UAS operators.[25] Air Force officials told us that they removed 206 of those pilots from the fighter pilot community in fiscal years 2011 through 2012. Reduced force structure has also decreased the opportunities for fighter

[24] For example, active duty end strength decreased from 1.4 million enlisted and officer personnel in fiscal year 2012 to 1.3 million requested in fiscal year 2018 (a 6-percent decrease). The Budget Control Act of 2011, Pub. L. No. 112-25 (2011), established, among other things, a congressional Joint Select Committee on Deficit Reduction to propose legislation that would reduce federal deficits by $1.5 trillion over 10 years (fiscal years 2012–2021), and two sequestration procedures: a sequestration procedure originally to be ordered by the President on January 1, 2013, to ensure that the level of deficit reduction would be achieved in the event that the Joint Committee failed to reach agreement to reduce the deficit by at least $1.2 trillion, and an additional sequestration procedure triggered if appropriations exceed established discretionary spending caps in a given fiscal year in fiscal years 2012 through 2021. The sequestration in fiscal year 2013 used the former procedure, triggered because the Joint Committee did not reach agreement.

[25] GAO, *Air Force: Actions Needed to Strengthen Management of Unmanned Aerial System Pilots*, GAO-14-316 (Washington, D.C.: Apr. 10, 2014).

pilots to gain experience in their aircraft. For example, the Air Force reported that the number of total Air Force fighter squadrons (including the reserve components) declined from 134 in fiscal year 1989 to 55 in fiscal year 2017 (a 59-percent decrease), and as such fewer squadrons are available to provide newly trained fighter pilots with flying experience.

Aircraft Readiness Challenges

Reduced aircraft availability has affected fighter pilots' ability to meet flight hour targets. Service leaders told us that this has resulted in delays in training new pilots with the necessary qualifications to participate in certain missions. Specifically, according to November 2017 testimony, Air Force, Navy, and Marine Corps leaders reported that fighter pilots do not meet military service flight hour targets—in part due to reduced aircraft availability. For example, Navy and Marine Corps leaders testified that Navy and Marine Corps F/A-18 pilots average 13.5 and 12.7 flight hours per month, respectively, compared with goals of 20.1 and 15.7 hours per month.[26] A senior Air Force leader testified before Congress that Air Force fighter pilots average about 16 flight hours per month.[27] In June 2017 we reported on readiness challenges in Air Force and Marine Corps aviation squadrons.[28]

The military services have trained fewer fighter pilots than targeted over the last decade. In fiscal years 2007 through 2016, the Air Force trained 12 percent fewer new fighter pilots than the targeted amount, while the Navy and the Marine Corps each trained 8 percent fewer new fighter pilots than the targeted amount.[29] Fighter pilots told us that the need to prioritize the staffing of experienced pilots to deploying squadrons has

[26] *Aviation Readiness: What's the Flight Plan?*: Hearing Before the House Committee on Armed Services (Readiness Subcommittee), 115th Congress (Nov. 9, 2017) (statements of Vice Admiral Troy M. Shoemaker, Commander, Naval Air Forces, United States Navy; and Lieutenant General Steven R. Rudder, Deputy Commandant for Aviation, United States Marine Corps).

[27] *Aviation Readiness: What's the Flight Plan?*: Hearing Before the House Committee on Armed Services (Readiness Subcommittee), 115th Congress (Nov. 9, 2017) (statement of Lieutenant General Mark C. Nowland, Deputy Chief of Staff for Operations, United States Air Force). Air Force officials told us that there is no associated flight hour target. Instead, Air Force readiness metrics focus on the number of sorties flown by pilots.

[28] GAO, *Department of Defense: Actions Needed to Address Five Key Mission Challenges*, GAO-17-369 (Washington, D.C.: June 13, 2017).

[29] Air Force training data include reserve component pilots.

limited the number of experienced personnel available to train newer pilots at home stations.

Reduced aircraft readiness has further limited fighter pilot training. Squadron leaders told us that longer maintenance of legacy aircraft reduces the availability of those aircraft for training, leading to insufficient numbers of trained pilots. In addition, aircraft readiness challenges led the Navy to pause flight training on the T-45 training aircraft in April 2017 due to safety concerns regarding the oxygen supply systems aboard the training aircraft. Navy officials reported that gaps in first tour operational positions designated for all fixed-wing aircraft pilot communities could grow from 86 pilots in fiscal year 2017 to about 100 in fiscal year 2019.

Recent Safety Concerns Regarding Onboard Systems in Naval Aircraft

In April 2017, the Navy paused all basic flight training on the T-45 aircraft due to safety concerns regarding the oxygen supply and atmospheric pressurization systems aboard the training aircraft. The Navy and the Marine Corps share basic flight training resources, including training for fixed-wing aircraft pilots on T-45 aircraft. Navy and Marine Corps officials told us that if these basic training squadrons are unable to produce newly trained fighter pilots on schedule, this can lead to a decreased number of new fighter pilots in both military services. The F/A-18 has also been affected by problems with onboard oxygen supply systems leading to hypoxia, which can occur when aircrews receive insufficient or contaminated oxygen on board the aircraft. In August 2017 the Navy established a team to lead its effort to research and prevent these problems in fixed-wing aircraft.

Source: GAO analysis of Navy and Marine Corps information. I GAO-18-113

Fighter Pilot Retention Challenges

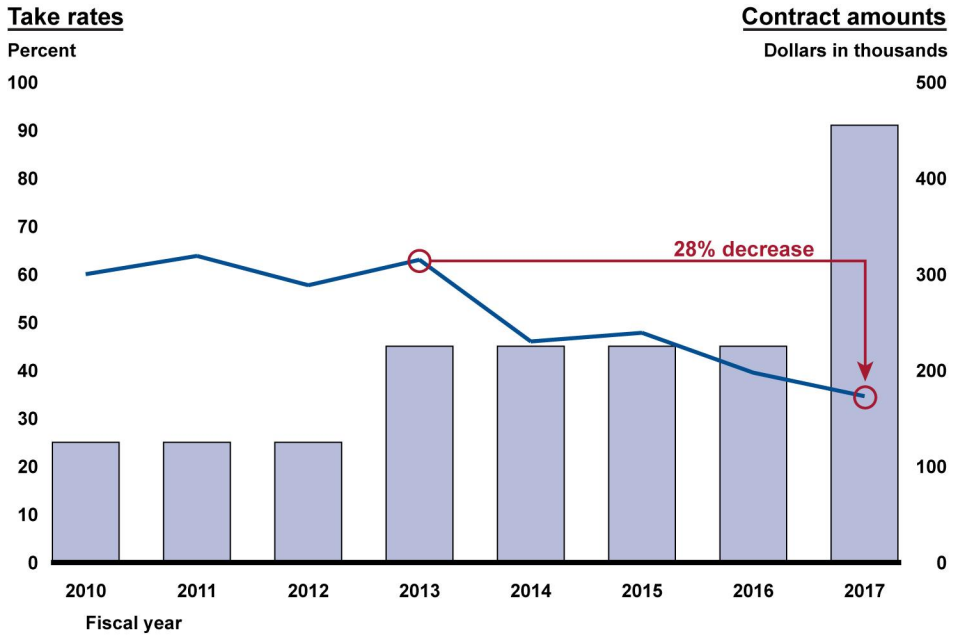
Declining retention has also contributed to low fighter pilot numbers. Our analysis of Air Force and Navy bonus retention data shows that retention of experienced fighter pilots has declined in recent years.[30]

We found that the number of Air Force fighter pilots that have signed retention contracts decreased from 63 percent in fiscal year 2013 to 35 percent in fiscal year 2017 (see fig. 6). This decline has continued even as the Air Force increased its maximum aviation bonus contract from $125,000 in fiscal year 2012 to $225,000 beginning in fiscal year 2013, the highest amount offered by any of the military services.[31]

[30] Unlike the Air Force and the Navy, the Marine Corps did not offer bonus retention contracts between fiscal years 2012 and 2017. Accordingly, we only present Air Force and Navy bonus retention contract data for those years.

[31] In fiscal year 2017, the Air Force increased the maximum aviation bonus contract to $455,000—13-year contracts at $35,000 per year.

Figure 6: Air Force Fighter Pilot Retention Bonus Take Rate and Maximum Contract Amounts Offered, Fiscal Years 2010-2017



Source: GAO analysis of Air Force data. | GAO-18-113

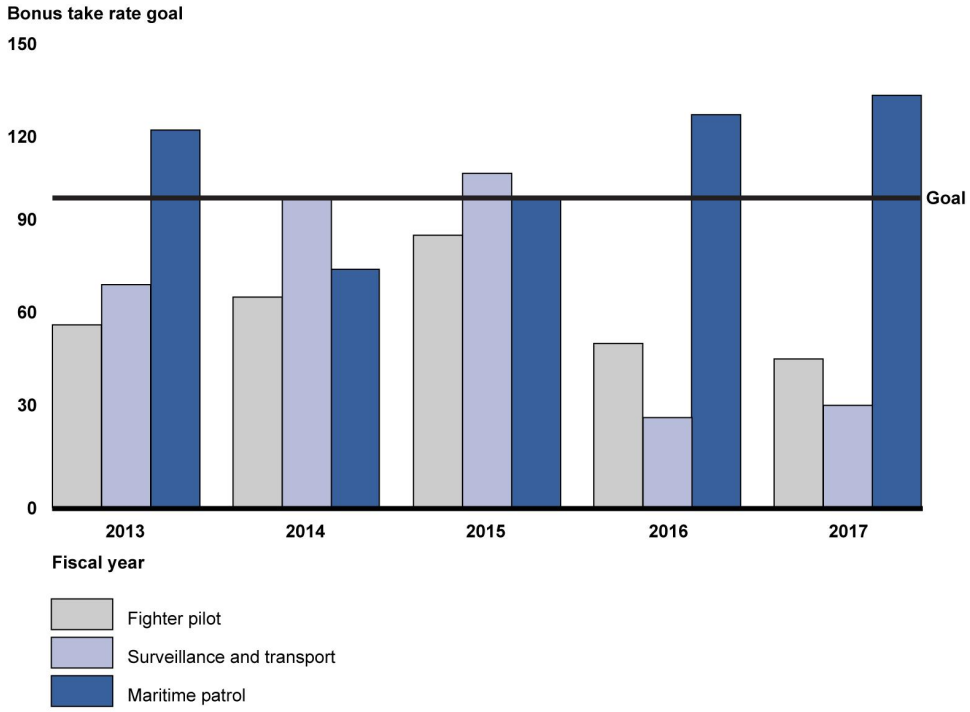
According to Navy retention data, the Navy pool of fighter pilots eligible for the Department Head milestone (i.e., a mid-career operational leadership tour for different aspects of squadron management for pilots with between about 11 and 13 years of service) has shrunk over time. Navy officials told us that, as a result, the percentage of fighter pilots selected for the Department Head milestone has increased. For example, the Department Head selection rate for Navy F/A-18 pilots increased from 49 percent in fiscal year 2012 to 100 percent in fiscal year 2017.

Further, the Navy did not meet its goals for fighter pilots signing retention bonuses at the Department Head milestone in fiscal years 2013 through 2017.[32] For example, the Navy fell short of its retention bonus target of 73 fighter pilots by 38 pilots (48 percent of the target) for fiscal year 2017. In comparison, the surveillance and transport pilot community met or exceeded its target of pilots who signed a bonus contract 2 out of 5 years during that same period, while the maritime patrol pilot community met or

[32] Retention data for the Department Head milestone are made available in annual aviation continuation pay reports to Congress. Fiscal year 2018 data will be available in fiscal year 2019.

exceeded its target 4 out of 5 years. Figure 7 shows the Navy Department Head active component fixed-wing pilot retention bonus take rate for fiscal years 2013 through 2017.

Figure 7: Navy's Active Duty Fixed-Wing Department Head Pilot Retention Bonus Take Rate, Fiscal Years 2013-2017



Source: GAO analysis of Navy data. | GAO-18-113

Squadron leaders and fighter pilots we met with attributed declining retention to the staffing approaches being used by the military services to mitigate fighter pilot gaps and fully staff deployed squadrons. For example, squadron leaders told us that assigning senior fighter pilots to junior positions hurts retention by reducing leadership opportunities believed to be necessary for promotion. Fighter pilots also told us that quality of life has decreased as a result of longer and more frequent deployments. Further, fighter pilots told us that understaffing fighter pilots in operational units has resulted in an increased workload per pilot and lower quality of service for non-deployed fighter pilots in those units.

The Air Force Has Implemented Initiatives to Help Increase Fighter Pilot Numbers and the Navy and the Marine Corps Are Formulating Initiatives to Address Overall Retention Concerns

The Air Force has developed and implemented initiatives to help increase fighter pilot numbers, and the Navy and the Marine Corps are developing initiatives to address overall retention concerns. The Air Force established a dedicated team to identify and develop initiatives specifically to address its reported fighter pilot shortage, and this effort has resulted in over 35 implemented initiatives. The Navy and the Marine Corps have not formulated initiatives specifically for fighter pilots, but have identified actions to address retention concerns. Navy and Marine Corps officials stated that, because the military services can still staff authorizations for deployed squadrons, they do not believe their staffing levels of fighter pilots have reached a critical shortage. However, Navy and Marine Corps personnel management officials we met with told us that they are closely monitoring trends in fighter pilot retention, and they believe that decreased retention in the near future may exacerbate fighter pilot gaps in their military services. The military services' initiatives are summarized below.

- The Air Force established a dedicated effort to address fighter pilot workforce challenges, and many initiatives from this effort have been implemented. Specifically, in March 2016, the Chief of Staff of the Air Force directed the initiation of an effort to address the Air Force fighter pilot shortage. The Air Force created a Fighter Enterprise Tiger Team in March 2016, and began formulating initiatives to address the fighter pilot shortage that the Air Force identified. For example, as the result of one initiative, 126 contractors have been placed in fighter squadrons to assist with administrative tasks and reduce workload for fighter pilots, and additional contractor support is in the process of being added. Also, in the fall of 2016 the Air Force reinstated its award program to recognize fighter pilots for superior performance. According to a member of the Air Force's Fighter Enterprise Tiger Team, the awards are non-monetary, but because they are merit-based they can help fighter pilots to be more competitive when being assessed for promotion.

  In February 2017, the Air Force effort was expanded from a focus on fighter pilots to include all rated personnel and renamed the Aircrew

Crisis Task Force.[33] The 37 initiatives implemented by the Air Force as of November 2017 as a result of the Fighter Enterprise Tiger Team and Aircrew Crisis Task Force efforts are presented in appendix V.

- The Navy is formulating a service-wide strategy—referred to as Sailor 2025—which includes over 40 initiatives to address retention issues throughout the Navy. We identified 10 initiatives from Sailor 2025 that may address some of the retention issues raised in our discussion groups with fighter pilots—such as dissatisfaction with the assignments and promotion processes. For example, Navy officials told us they are developing staffing software to manage assignments and make the process more transparent and flexible. The Navy is also testing a new performance evaluation system to more accurately evaluate sailor performance. In addition, the Navy has adjusted the existing aviation bonus program by increasing the maximum bonus amount for fighter pilots from $25,000 to $30,000 per year for fiscal year 2018.[34] To increase the number of available fighter aircraft, the Navy has also established a Rhino Readiness Recovery team—referring to the Navy's term for the F/A-18 E-F Super Hornet aircraft—to identify and address readiness challenges in that community. Navy officials told us they believe their approaches are sufficient to address any potential future Navy fighter pilot gaps.
- In November 2017, the Marine Corps reinstated the aviation bonus program last offered by the Marine Corps in fiscal year 2011. The Marine Corps is offering 2-year contracts totaling $40,000 to fighter pilots who have completed their service obligation—except for those fighter pilots assigned to the EA-6B aircraft. However, the Marine Corps is not in the process of developing any non-monetary initiatives to address pilot retention. Rather, the Marine Corps is addressing aircraft readiness challenges—an issue consistently raised by fighter pilots in our discussion groups—by establishing four lines of effort to increase the number of available fighter aircraft for fighter squadrons. Marine Corps officials told us that they have begun implementing multiple initiatives for those lines of effort. For example, one initiative is focused on improving availability of aircraft spare parts by increasing their funding and modernizing the spare parts supply chain. Another initiative is focused on growing the maintenance workforce

[33] Rated personnel are servicemembers with an aeronautical rating including pilots, combat systems officers, and air battle managers.

[34] This amount is less than the maximum authorized by Congress and significantly less than the amounts in bonus contracts offered by the Air Force.

and retaining experienced aircraft maintainers. Specifically, the Marine Corps is offering retention bonuses to experienced aircraft maintainers.

The Military Services Have Not Reevaluated Fighter Pilot Squadron Requirements to Reflect Changing Conditions, Increased Workload, and Emerging UAS Requirements

Fighter pilots and squadron leaders told us that the fighter pilot occupation has significantly changed in recent years, but the military services have not reevaluated fighter squadron requirements. Fighter pilots and squadron leaders from each of the military services consistently told us that the fighter pilot occupation has significantly changed in recent years due to changes in fighter aircraft tactics and technology, additional training requirements, and the removal of administrative support positions from squadrons. The fighter pilots added that these changes have led to an unsustainable increase in workload. As discussed earlier, squadron requirements—the number of fighter pilots needed to meet operational mission needs—are calculated by the military services using a variety of inputs, including workload. Once these requirements are funded by Congress, they are an "authorization." Service guidance requires squadron requirements to be reevaluated on a 2-year schedule (5 years for the Navy) and to be updated as conditions change.[35]

For the Air Force, guidance defines staffing requirements as the staffing needed to accomplish a job, mission, or program, and notes that staffing should be sized to reflect the minimum essential level to accomplish the required workload.[36] The Office of the Administrative Assistant to the Secretary of the Air Force (Resources), along with Major Command manpower staffs establish staffing standards and, at a minimum, by policy are to reevaluate these standards for applicability and updates every 2 years, or earlier if dictated by significant workload or mission changes. The Air Force Manpower Analysis Agency determines staffing resource requirements and provides staffing and management consultation

[35] AFI 38-201; OPNAVINST C3501.2L (C); MCO 5311.1E.

[36] AFI 38-201.

services to Air Force functional communities for improved resource utilization and enhanced mission effectiveness and efficiency.[37]

The Air Force could not provide specifics on the most recent updates to squadron requirements, because such data were stored in a database that managed requirements on a position-by-position basis, rather than aggregated by squadron. Air Force pilots and squadron leaders consistently told us that changing conditions in fighter squadrons, such as a higher pace of changes to tactics and technology, increased training requirements, and reduced administrative support, have increased fighter pilot workload. However, Air Force officials told us that metrics that inform squadron requirements (i.e., crew ratios, the targeted ratio of pilots to aircraft) have not been increased because the Air Force is instead prioritizing the effort to recapitalize its fleet of fighter aircraft. Separately from reevaluating squadron requirements, Air Force officials told us that they have implemented changes to address workload concerns cited by fighter pilots—such as adding contractor staff in squadrons to provide administrative support, as part of initiatives to address fighter pilot shortages they have identified. According to Air Force officials, the Air Force is currently reassessing non-operational requirements for fighter pilots (i.e., non-flying positions at headquarters organizations). Air Force officials told us that this reassessment is focused on determining which non-operational requirements currently assigned to fighter pilots could be assigned to other types of officers or pilots, to reduce the overall number of fighter pilot requirements.

For the Navy, squadron requirements are dependent on the current wartime requirements developed by the Navy, referred to as the *Required Operational Capability and Projected Operational Environment* of a particular squadron, aircraft configuration, specified operating profile, computed workload, and established doctrinal constraints.[38] The June 2017 update to the relevant Navy guidance reduced the frequency of the reviews of these requirements from every 2 years to every 5 years, with updates as required by those officials responsible for specific units.[39]

[37] Air Force Mission Directive 41, *Air Force Manpower Analysis Agency (AFMAA)* (July 23, 2016).

[38] OPNAVINST 1000.16L.

[39] OPNAVINST C3501.2L (C).

Navy officials told us that reviews are to be completed every 2 years, but updates are only made to squadron staffing documents if specific events occur, such as additional aircraft being assigned to a squadron. Navy officials added that they believe squadron requirements are accurate and updated with sufficient frequency. However, Navy pilots and squadron leaders consistently told us that changing conditions in fighter squadrons, such as a higher pace of changes to tactics and technology, increased training requirements, and more frequent individual deployments, have increased fighter pilot workload. However, the Navy has not recently updated squadron requirements to reflect such changes. Specifically, Navy fighter pilot squadron requirements are outlined in 15 Navy squadron staffing documents, and as of November 2017, 9 out of 15 of those documents had not been updated within the last 2 years.

For the Marine Corps, guidance states that reviews to optimize force structure will be conducted every 2 years, taking into consideration new and emerging requirements.[40] Marine Corps pilots and squadron leaders consistently told us that changing conditions in fighter squadrons, such as a higher pace of changes to tactics and technology, reduced aircraft availability, and more frequent individual deployments, have increased fighter pilot workload. However, the Marine Corps has not updated squadron requirements to reflect such changes. Specifically, Marine Corps fighter pilot squadron requirements are outlined in four fighter squadron staffing documents, and, as of November 2017, none had been updated within the last 2 years.

Marine Corps squadron leaders and fighter pilots told us that updates to squadron requirements are not being conducted for squadrons of legacy aircraft, but added that they believe updates are warranted due to the continued delays in fielding the F-35 and resulting extensions to the planned service of legacy platforms. Marine Corps officials told us that they have not updated squadron requirements because (1) Marine Corps fighter pilot authorizations and staffing levels are below squadron requirements, so any increase to squadron requirements would require a significant increase to fighter pilot authorizations, and (2) the Marine Corps has faced challenges obtaining technical assistance to conduct workload assessments in fighter squadrons. The Navy Manpower Analysis Center conducts workload reviews of squadrons, based on specific events such as changes to the amount of time needed for

[40] MCO 5311.1E.

maintaining the specific type of aircraft. Navy and Marine Corps fighter pilots we met with told us that they have had difficulties maintaining fighter jets in their squadrons, and Navy and Marine Corps leaders have made similar statements in congressional testimony.[41] Further, Marine Corps officials told us that they have had difficulty utilizing the Navy Manpower Analysis Center to update workload analyses for their fighter squadrons, as they believed the center prioritizes work for Navy organizations. Navy Manpower Analysis Center officials told us that there is no formal requirement for their organization to conduct analyses for the Marine Corps, but that they respond to such requests on an ad-hoc basis. They added that the Marine Corps Combat Development Command has formal responsibility for updating Marine Corps workload analyses. We have previously reported that the size and data collection capacity of the Navy Manpower Analysis Center has limited the Navy's capacity to carry out periodic workload reassessments, which may be a contributing factor to chronic under-staffing of ship crews.[42]

The Military Services Have Not Incorporated Plans for Increased Reliance on UAS into Fighter Pilot Workforce Projections

According to a DOD planning document, funding for UAS platforms was expected to grow by 17 percent in fiscal years 2014 through 2018.[43] Moreover, in 2015, the Secretary of the Navy directed the establishment of a Deputy Assistant Secretary of the Navy for Unmanned Systems[44] and announced that the F-35 will likely be the last cockpit-operated strike fighter aircraft the Department of the Navy will buy or fly.[45] The Chief of

[41] *Aviation Readiness: What's the Flight Plan?*; Hearing before the Subcommittee on Readiness of the House Committee on Armed Services, 115th Cong. (Nov. 9, 2017) (statements of Vice Admiral Mike Shoemaker, Commander, Naval Air Forces, and Lieutenant General Steven Rudder, Deputy Commandant for Aviation, United States Marine Corps).

[42] GAO, *Navy Force Structure: Actions Needed to Ensure Proper Size and Composition of Ship Crews*, GAO-17-413 (Washington, D.C.: May 18, 2017).

[43] Department of Defense, *Unmanned Systems Integrated Roadmap FY2013-2038* (January 2014).

[44] Secretary of the Navy Memorandum, *Treat Unmanned as Unmanned* (Nov. 13, 2015).

[45] Prepared remarks of Ray Mabus, Secretary of the Navy, for the Sea-Air-Space Exposition (Apr. 15, 2015).

Naval Operations announced in 2017 that the future of the Navy includes UAS systems as an integral part of the future fleet and must be purchased in large numbers to expand naval presence in key areas.[46] For example, the Navy is developing a UAS platform—the MQ-25 Stingray—which is intended to replace that portion of the F/A-18 fighter aircraft's mission set that involves re-fueling other F/A-18 aircraft.

Also, in 2015 the Secretary of the Air Force stated that UAS pilots were flying on average about four times more hours than pilots in cockpit-operated aircraft.[47] Further, a document outlining the Air Force's vision for UAS for fiscal years 2009 through 2047 notes that systems will work in tandem with cockpit-operated aircraft, for example to attack air-defense systems, and that autonomous technologies will potentially allow one pilot to direct multiple aircraft, leading to personnel efficiencies.[48]

Although the impact of UAS on the fighter pilot workforce appears to be significant, the Air Force, the Navy, and the Marine Corps have not accounted for the planned increased use of UAS to complete missions similar to those carried out by fighter aircraft, and the potential impact of these changes on fighter pilot requirements. Specifically, Air Force and Navy officials told us that their military services have not conducted an assessment of the impact of future UAS operations on fighter pilot requirements.[49] While the UAS platforms that are expected to overlap with fighter aircraft missions will not be fielded until the mid-2020s, the length of time required to develop an experienced fighter pilot compels the military services to begin incorporating these planned changes to fighter pilot requirements promptly. For example, Navy fighter pilots who are entering initial training in 2018 will not have completed their active duty service obligation (currently 8 years after Navy pilots complete flight training) when the MQ-25 Stingray system is expected to be fielded in 2026.

[46] Admiral John Richardson, Chief of Naval Operations White Paper, *The Future Navy* (May 17, 2017).

[47] Deborah Lee James, Secretary of the Air Force, *State of the Air Force Press Briefing* (Jan. 15, 2015).

[48] United States Air Force, *Unmanned Aircraft Systems Flight Plan 2009-2047* (May 18, 2009).

[49] According to Marine Corps officials, the Marine Corps uses enlisted personnel to operate UAS.

A key tenet of human capital planning is determining existing and future skills and competencies, and associated workforce gaps.[50] Without steps by the military services, to include reevaluating workload and taking into account the impact that the planned use of UAS will have on the fighter pilot workforce, the military services will not fully know the extent and nature of gaps between fighter pilot numbers and authorizations and how to best target actions to address these gaps.

Conclusions

Fighter pilots are critical to achieving and maintaining air dominance during combat operations. To achieve that mission, the military services must have appropriate numbers of qualified fighter pilots. Service officials report that no unit is deploying without 100 percent of its fighter pilots, and they believe that they will continue to be able to meet their operational missions. Nevertheless, the Air Force, the Navy, and the Marine Corps, are reporting fewer fighter pilots than authorizations, and they project that these gaps will continue through at least fiscal year 2023. Without re-evaluating fighter pilot requirements, it will be difficult for the military services to accurately determine the number of fighter pilots needed to complete missions and help ensure success in combat. Specifically, without updating squadron requirements to reflect the growing administrative burden on fighter pilots in non-deployed squadrons, the currently identified differences between fighter pilot numbers and authorizations may be understated. By contrast, without updating future fighter pilot requirements to take into account changing roles and missions—in particular the increasing role of UAS in combat operations—forecasted fighter pilot gaps may be overstated. In short, reevaluating fighter pilot requirements is a key first step to help the military services clearly determine the magnitude of the gaps and target strategies to meet their personnel needs.

[50] GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, GAO-04-39 (Washington, D.C.: Dec. 11, 2003). To identify strategic workforce planning principles, we reviewed our own guidance, reports, and testimonies on federal agencies' workforce planning and human capital management efforts and guidance available from leading human capital periodicals, such as the *Workforce Planning Resource Guide for Public Sector Human Resource Professionals*. We also met with officials from organizations with government-wide responsibilities for or expertise in workforce planning, such as the Office of Personnel Management and the National Academy of Public Administration, to identify additional guidance. We synthesized the information we collected and derived principles that appeared most important to effective strategic workforce planning.

Recommendations for Executive Action

We are making the following three recommendations:

- The Secretary of the Air Force should ensure that the Director of Operations and the Air Force Manpower Analysis Agency reevaluate fighter pilot squadron requirements, to include updating current assumptions of fighter pilot workload, and assessing the impact of future incorporation of UAS platforms into combat aviation. (Recommendation 1)
- The Secretary of the Navy should ensure that the Chief of Naval Operations reevaluate fighter pilot squadron requirements, to include updating current assumptions of fighter pilot workload, and assessing the impact of future incorporation of UAS platforms into combat aviation. (Recommendation 2)
- The Secretary of the Navy should ensure that the Commandant of the Marine Corps and the Deputy Commandant for Aviation reevaluate fighter pilot squadron requirements. (Recommendation 3)

Agency Comments

We provided a draft of this report to DOD for review and comment. We had initially recommended that the Marine Corps also assess the impact of UAS platforms on fighter pilot squadron requirements, but removed that portion of the third recommendation because Marine Corps officials told us that Marine Corps UAS squadrons will continue to be resourced with operators through the accession process and Marine Corps UAS operator requirements do not affect either pilot inventories or fighter pilot workload. In its written comments, reproduced in appendix VI, DOD concurred with our recommendations, citing its commitment to addressing manpower, personnel, and training challenges for the fighter pilot community and broader aviation and aviation support capabilities. DOD also provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to appropriate congressional committees; the Secretary of Defense; the Secretary of the Air Force; the Secretary of the Navy; and the Commandant of the Marine Corps. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact Brenda S. Farrell at (202) 512-3604 or farrellb@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VII.

Brenda S. Farrell
Director, Defense Capabilities and Management

Appendix I: Scope and Methodology

To assess the extent to which the military services had differences in the number of fighter pilots compared to authorizations, as well as contributing factors and service initiatives to address the differences, we obtained and analyzed data on authorizations designated for pilots and corresponding staffing levels of pilots for all fixed-wing, cockpit-operated (hereafter referred to as fixed-wing) aircraft communities in the Air Force, the Navy, and the Marine Corps. We did not include the Army in the scope of our review because the Army does not operate fighter aircraft.

For the Air Force and the Marine Corps active component, we compared pilot staffing levels with authorizations for all fixed-wing aircraft communities for fiscal years 2006 through 2017.[1] We obtained and analyzed projected authorizations and staffing levels for the same pilot communities for fiscal years 2018 through 2023. We further obtained and reviewed Marine Corps data on fighter pilot operational position staffing targets and staffing levels for fiscal year 2017 and similar Air Force data for fiscal year 2018. We also compared Air Force and Marine Corps reserve component fighter pilot staffing levels with authorizations for fiscal years 2006 through 2017.

For the Navy, we obtained and analyzed data on authorizations designated for active and reserve component pilots for fiscal years 2006 through 2017, and staffing levels for all Navy fixed-wing aircraft communities in the active component for fiscal years 2011 through 2017. However, the Navy's authorization data did not specify how many fighter pilots were assigned to non-flying assignments because the Navy does not fully assign non-flying authorizations to specific communities, unlike the Air Force and the Marine Corps. Therefore, we were unable to conduct an analysis comparing total Navy fighter pilot staffing levels with authorizations, as we did for the Air Force and the Marine Corps. We instead obtained and analyzed Navy data on differences between

[1] Authorizations include both operational and non-operational positions. Operational positions include flying positions and certain non-flying positions that directly support combat operations. Non-operational positions are generally non-flying positions, some of which can be filled by other types of military service officers.

authorizations and pilot staffing levels for first operational tour, Department Head, and Command positions for all fixed-wing aircraft pilot communities in the active component. We also obtained and analyzed Navy data on differences between staffing targets and pilot staffing levels for the Navy Reserve for fiscal year 2017, the only year of data available. We also obtained and analyzed Navy retention data for pilots eligible for Department Head assignments, a mid-career milestone in fixed-wing communities for fiscal years 2011 through 2017. Retention data for the Department Head milestone are made available in annual aviation continuation pay reports to Congress. Fiscal year 2018 retention data will be available in fiscal year 2019. We further obtained and analyzed the number of fighter pilots the Air Force, the Navy, and the Marine Corps trained in fiscal years 2007 through 2016.

To assess the reliability of the data we obtained, we reviewed corroborating documentation, analyzed the data for inconsistencies, and interviewed service officials about the reliability of the data. We determined that the data we used were sufficiently reliable to describe the trends in personnel staffing levels and authorizations for the time period included in our scope.

We met with DOD and service officials to discuss the results of our analysis and factors that may have contributed to low numbers of fighter pilots. We also collected and reviewed service documentation regarding the factors they identified. We interviewed service officials and reviewed documentation to identify any initiatives taken or planned to increase fighter pilot numbers.

In addition, we selected a non-generalizable sample of locations where fighter pilots are stationed (see table 1). We selected these locations based on geographic diversity (one location for each military service in both the eastern and western portions of the contiguous United States), a diversity of types of fighter aircraft, and a mix of squadron types at the locations (i.e., operational squadrons, training squadrons, and reserve component squadrons). In selecting locations we also considered the availability of pilots due to conflicts with deployment or training events. At each location, we moderated one to two discussion groups with fighter pilots for a total of 13 discussion groups ranging from between 3 and 20 pilots per group. We held separate sessions with junior and senior pilots at all locations, except for at Naval Air Station Oceana, Marine Corps Air Station Cherry Point, and Marine Corps Air Station Miramar, due to pilot availability. We also interviewed unit leadership at these locations (i.e., wing and squadron commanders and executive officers) to obtain their

perspective on the status of the fighter pilot workforce. While these discussion groups and interviews allowed us to learn about many important aspects of the fighter pilot workforce from the perspective of fighter pilots and squadron leaders, they were designed to provide anecdotal information and not results that would be representative of all the department's more than 5,000 fighter pilots as of fiscal year 2017.

Table 1: Locations Visited for Fighter Pilot Discussion Groups

Military service	Installation	Location	Aircraft type
Air Force[a]	Holloman AFB	Alamogordo, NM	F-16 Fighting Falcon
	Hill AFB	Ogden, UT	F-16 Fighting Falcon F-35 Lightning II
Navy	NAS Oceana	Virginia Beach, VA	F/A-18 Hornet
	NAS Lemoore	Lemoore, CA	F/A-18 Hornet
Marine Corps	MCAS Cherry Point	Havelock, NC	AV-8B Harrier EA-6B Prowler
	MCAS Yuma	Yuma, AZ	AV-8B Harrier F-35 Lightning II
	MCAS Miramar	San Diego, CA	F/A-18 Hornet

Source: GAO. | GAO-18-113

Note: AFB = Air Force Base; NAS = Naval Air Station; MCAS = Marine Corps Air Station

[a] Due to the unavailability of fighter pilots at a location we had selected in the eastern portion of the contiguous United States, both of the Air Force locations we visited were located in the western portion of the contiguous United States.

To assess the extent to which the military services have reevaluated squadron requirements for the number of fighter pilots needed, including the consideration of UAS pilot requirements, we reviewed service guidance to determine the frequency with which elements of fighter pilot squadron requirements are to be reevaluated, reviewed service documentation, and interviewed service officials to determine the extent to which these elements had been reevaluated on schedule, reviewed service documentation regarding the planned mix of cockpit-operated and remotely-operated aviation platforms for future operations, and discussed with service officials the extent to which these plans are incorporated into forecasts of fighter pilot squadron requirements.

We conducted this performance audit from November 2016 to April 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.

Appendix II: Comparison of Air Force Pilot Staffing Levels and Authorizations for Fixed-Wing, Cockpit-Operated Aircraft

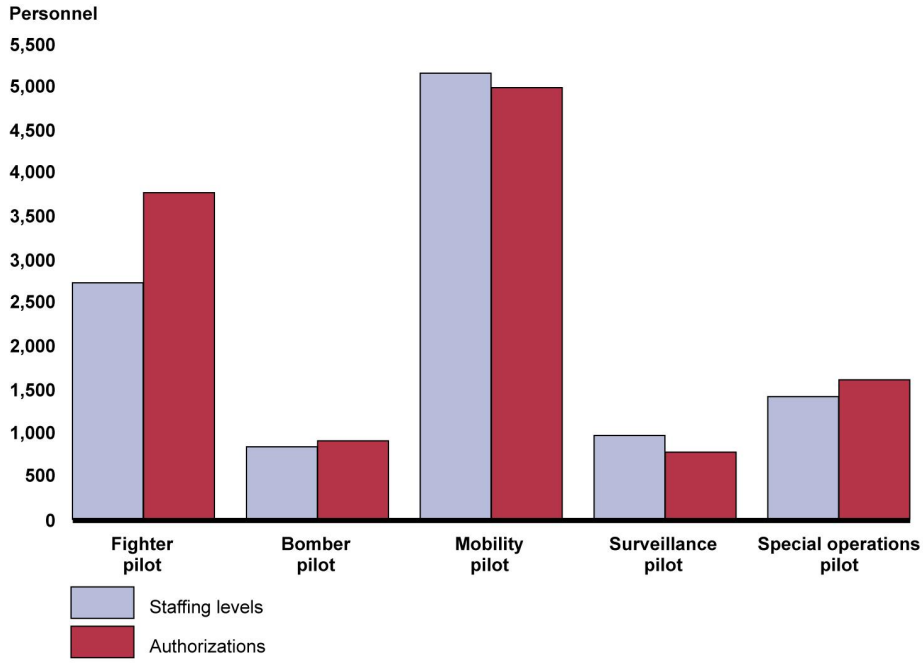
The Air Force uses pilots from both the active and reserve components to staff fixed-wing, cockpit-operated (hereafter referred to as fixed-wing) aircraft pilot positions that Congress authorizes and funds through appropriations. These Air Force pilots staff a mix of operational and non-operational positions. Operational positions include both flying (e.g., combat pilot or instructor pilot positions) and non-flying positions (e.g., close air support duty officer positions in an Air Operations Center) that directly support combat operations. Non-operational positions are generally non-flying, and include assignments to headquarters or combatant command positions, some of which can be staffed by other types of Air Force officers. This appendix compares Air Force pilot staffing levels with authorizations for operational and non-operational positions for all fixed-wing aircraft communities for fiscal years 2006 through 2017.

Air Force fixed-wing community pilots operate fighter, bomber, mobility, surveillance, and special operations aircraft. Fighter pilots operate tactical aircraft that engage in air-to-air and air-to-surface attacks and include the A-10, F-15, F-16, F-22A, and F-35 aircraft. Bomber pilots operate aircraft to deliver munitions and include the B-1, B-2, and B-52 aircraft. Mobility pilots operate aircraft used for aerial refueling and troop and cargo transport and include the C-17 and KC-135 aircraft. Surveillance pilots operate aircraft used for surveillance and reconnaissance to support ground troops and include the E-8 and U-2 aircraft. Special operations pilots operate aircraft that provide close-air support for ground troops, including the AC-130.

Air Force officials report that they can staff certain operational positions designated for fighter pilots with pilots from other pilot communities that

have surpluses. For example, Air Force officials told us they can staff mobility or surveillance pilots (communities which both had a surplus of pilots in fiscal year 2017) to certain basic flying training instructor pilot positions that would otherwise be staffed by fighter pilots. Figure 8 shows the Air Force active component fixed-wing aircraft community pilot staffing levels and authorizations for fiscal year 2017.

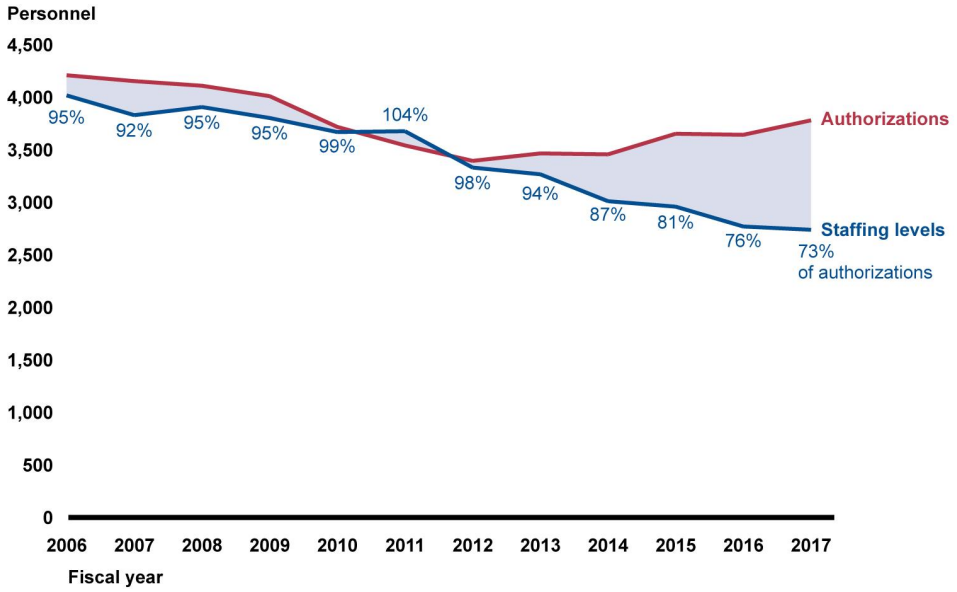
Figure 8: Comparison of Air Force's Fixed-Wing Pilot Actual Staffing Levels with Authorizations, Fiscal Year 2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data for the active component, the Air Force had fewer fighter pilots than authorizations in 11 of 12 years from fiscal year 2006 through fiscal year 2017. This gap grew from 192 fighter pilots (5 percent of authorizations) in fiscal year 2006 to 1,005 (27 percent of authorizations) in fiscal year 2017. Figure 9 shows the comparison of the Air Force's active component fighter pilot staffing levels with authorizations for fiscal years 2006 through 2017.

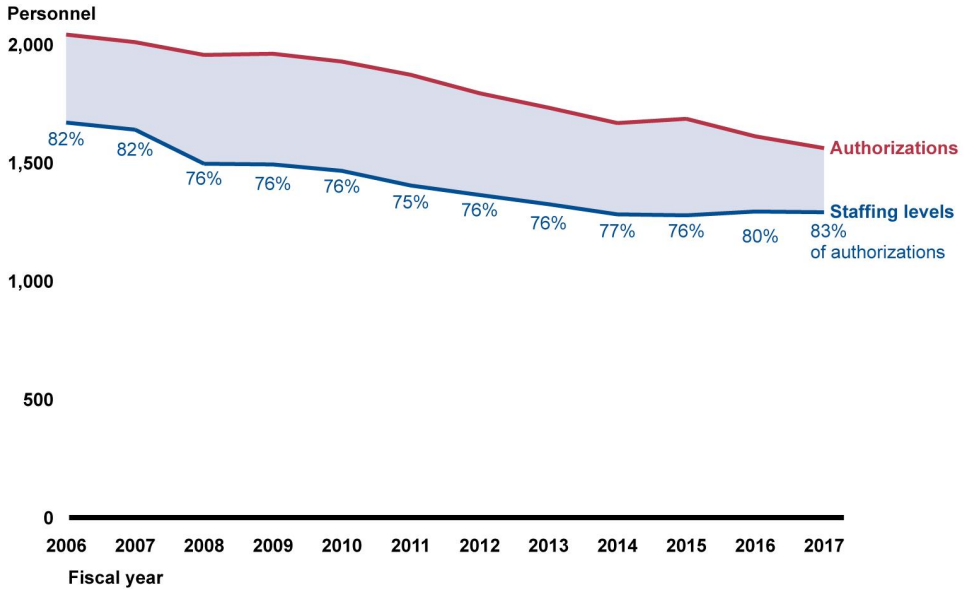
Figure 9: Air Force's Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data for the reserve components the Air National Guard and the Air Force Reserve, the Air Force had fewer fighter pilots than authorizations every fiscal year from fiscal year 2006 through 2017. For example, the Air Force reported that the reserve components had a gap of 271 fighter pilots (17 percent of authorizations) in fiscal year 2017. Figure 10 illustrates the gap between staffing levels and authorizations for Air Force fighter pilots in the reserve components for fiscal years 2006 through 2017.

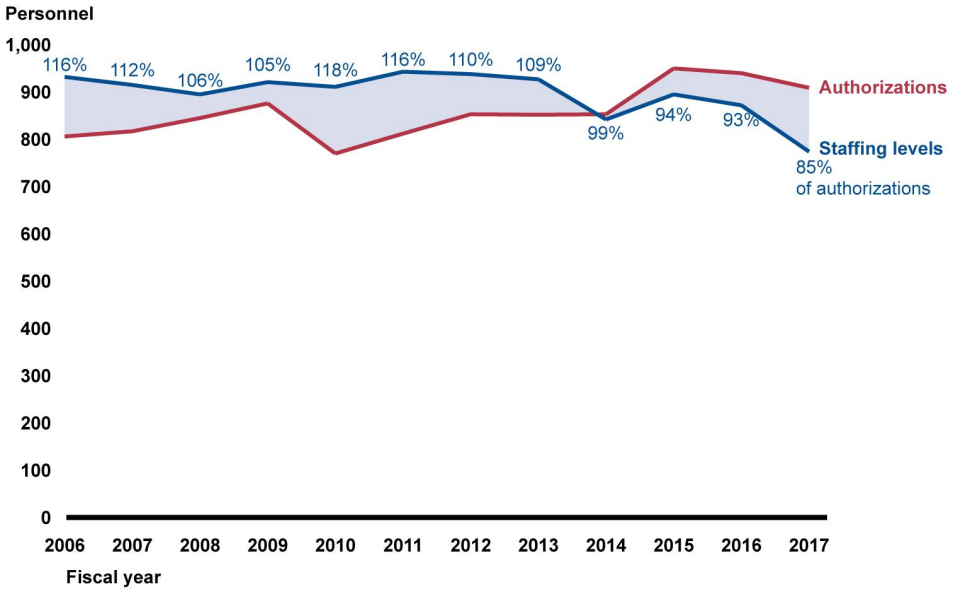
Figure 10: Air Force's Reserve Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data for the active component, the Air Force had fewer bomber pilots than authorizations in fiscal years 2014 through 2017. This gap grew from 11 bomber pilots (1 percent of authorizations) in fiscal year 2014 to 135 (15 percent of authorizations) in fiscal year 2017. Figure 11 shows the comparison of the Air Force's active component bomber pilot staffing levels with authorizations for fiscal years 2006 through 2017.

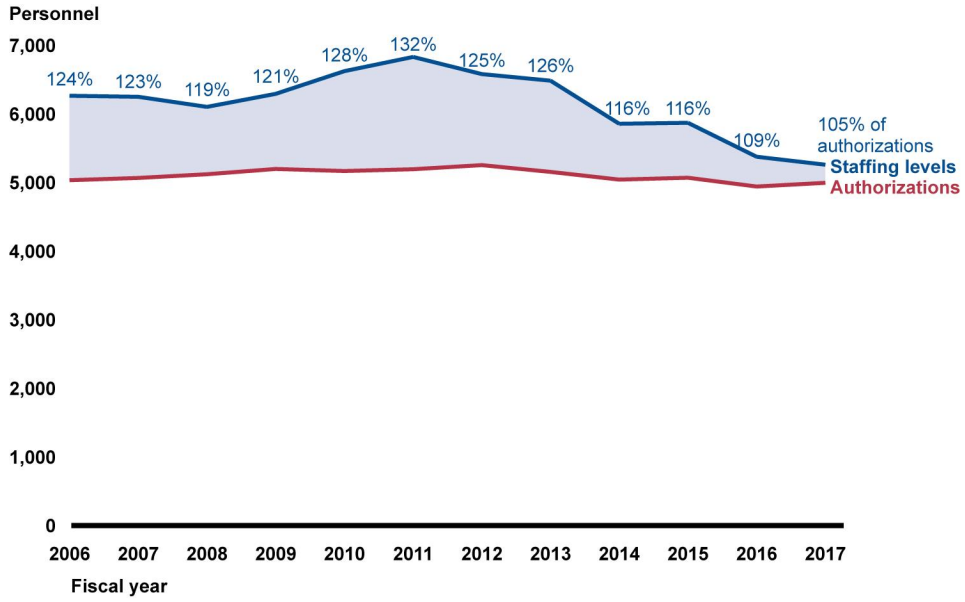
Figure 11: Air Force's Active Component Bomber Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data for the active component, the Air Force had more mobility pilots than authorizations from fiscal year 2006 through fiscal year 2017. This surplus peaked at 1,637 mobility pilots (132 percent of authorizations) in fiscal year 2011, and declined to 264 (105 percent of authorizations) in fiscal year 2017. Figure 12 shows the comparison of the Air Force's active component mobility pilot staffing levels with authorizations for fiscal years 2006 through 2017.

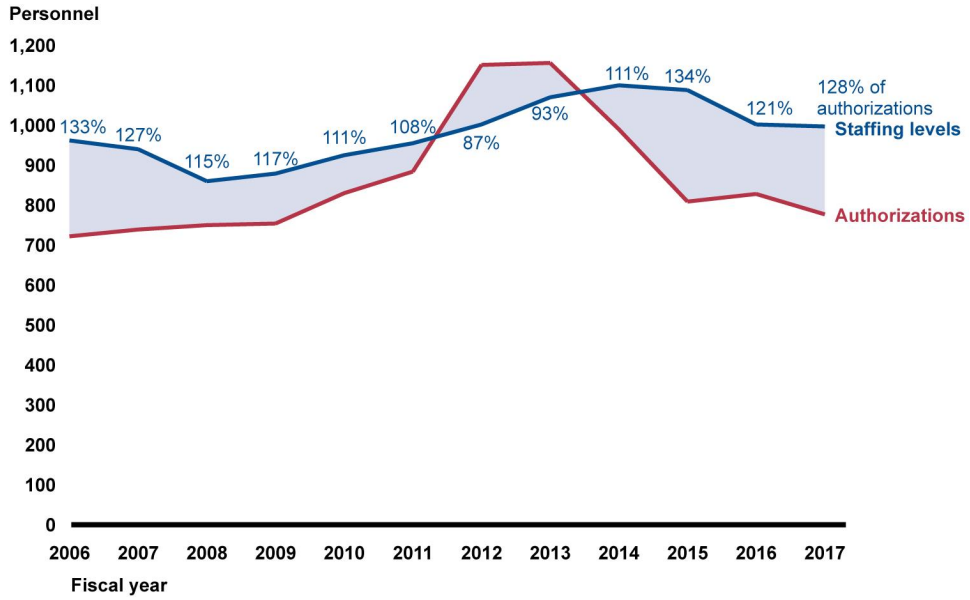
Figure 12: Air Force's Active Component Mobility Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data for the active component for fiscal years 2006 through 2017, the Air Force had fewer surveillance pilots than authorizations in fiscal years 2012 and 2013. In fiscal year 2017, the surplus was 220 surveillance pilots (128 percent of authorizations). Figure 13 shows the comparison of the Air Force's active component surveillance pilot staffing levels with authorizations for fiscal years 2006 through 2017.

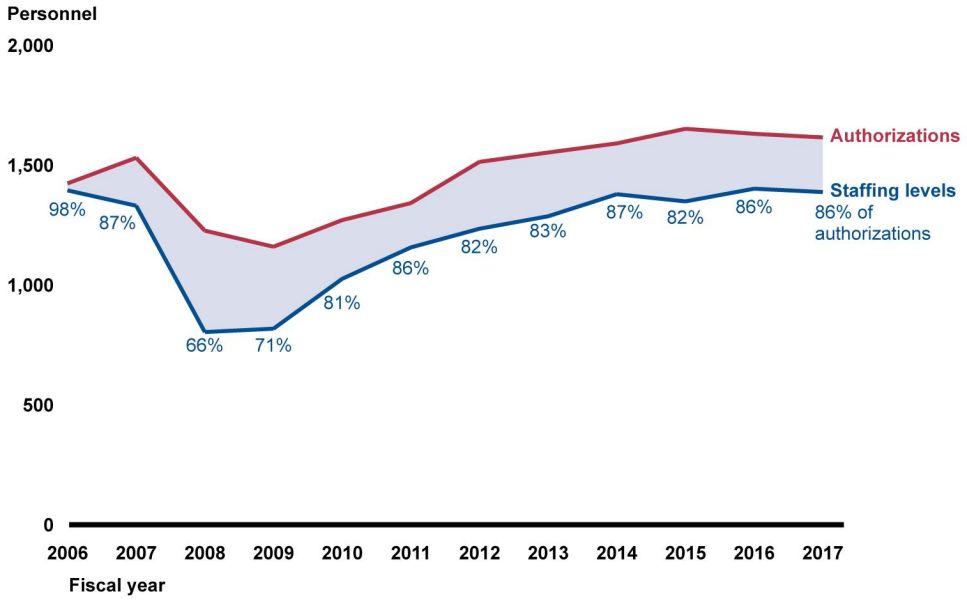
Figure 13: Air Force's Active Component Surveillance Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

According to Air Force data for the active component, the Air Force had fewer special operations pilots than authorizations from fiscal year 2006 through fiscal year 2017. Special operations pilot staffing levels and authorizations have increased substantially from fiscal year 2009 through fiscal year 2017. Further, the gap between the staffing levels and authorizations decreased from 342 special operations pilots (29 percent of authorizations) in fiscal year 2009 to 227 (14 percent of authorizations) in fiscal year 2017. Figure 14 shows the comparison of the Air Force's active component special operations pilot staffing levels with authorizations for fiscal years 2006 through 2017.

Figure 14: Air Force's Active Component Special Operations Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Air Force data. | GAO-18-113

Appendix III: Comparison of Navy Pilot Staffing Levels and Authorizations for Fixed-Wing, Cockpit-Operated Aircraft

The Navy uses pilots from both the active and reserve component to staff fixed-wing, cockpit operated (hereafter referred to as fixed-wing) aircraft pilot positions that Congress authorizes and funds through appropriations. These Navy pilots staff a mix of operational and non-operational positions. Operational positions include both flying (i.e., combat pilot or instructor pilot) and non-flying positions that directly support combat operations. Non-operational positions are generally non-flying positions, and include assignments to positions at headquarters or in the combatant commands that can be staffed by other types of Navy officers.

The Navy does not separate non-operational fighter pilot authorizations from authorizations for other pilots. As a result, this appendix only presents Navy pilot staffing levels for those communities for fiscal years 2011 through 2017, and compares Navy pilot staffing levels to specific operational positions. Specifically, we compared authorizations and pilot staffing levels for Navy first operational tour, Department Head, and Command positions for all fixed-wing, cockpit-operated aircraft communities in the active component for fiscal years 2013 through 2017.[1]

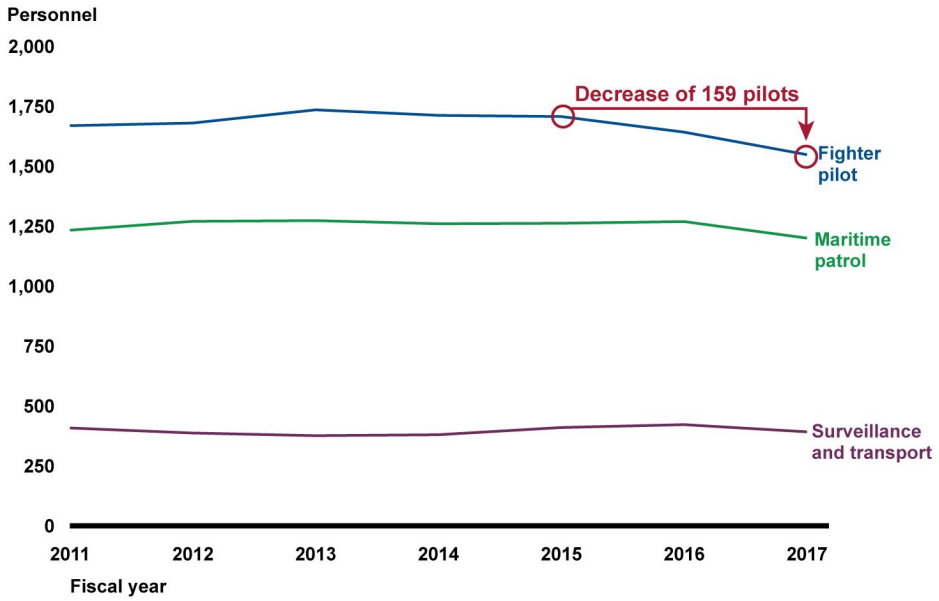
Navy fixed-wing community pilots operate fighter, surveillance and transport, and maritime patrol aircraft. Navy fighter pilots operate tactical aircraft for air defense and support. Fighter aircraft include both legacy

[1] Staffing level data for the Navy Department Head and Command milestones include all Naval aviators –pilots and Naval Flight Officers (i.e. the officers that are responsible for navigation or weapon systems on cockpit-operated aircraft).

and Super Hornet variants of the F/A-18,[2] as well as newer tactical aircraft such as the EA-18G developed for electronic warfare and the F-35. Surveillance and transport pilots operate turboprop aircraft, including the E-2D for surveillance and airborne early warning missions and the C-2A for troop and cargo transport between aircraft carriers and shore bases. Maritime patrol pilots operate jet aircraft for missions including anti-submarine warfare and anti-surface warfare, and include aircraft such as the P-8A.

According to Navy personnel data, Navy fighter pilot staffing levels decreased from 1,707 fighter pilots in fiscal year 2015 to 1,548 (a 9-percent decrease) in fiscal year 2017. Figure 15 compares changes in the Navy fighter, surveillance and transport, and maritime patrol pilot staffing levels for fiscal years 2011 through 2017.

Figure 15: Navy's Active Component Fixed-Wing Pilot Actual Staffing Levels, by Community, Fiscal Years 2011-2017



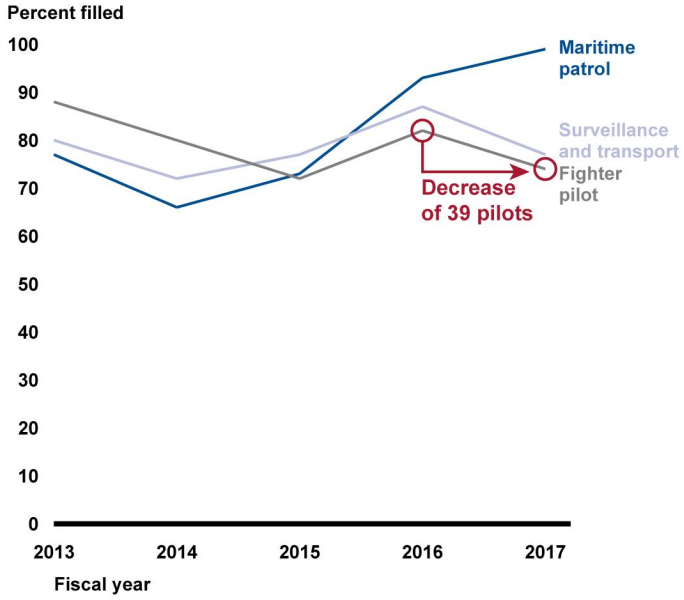
Source: GAO analysis of Navy data. | GAO-18-113

According to Navy fixed-wing pilot staffing levels and authorizations data for the first tour milestone (i.e., pilots' first operational tours at sea for

[2] All F/A-18 pilots conduct a range of missions, including air defense, fighter escort, and air support. Super Hornet pilots are additionally responsible for aerial refueling missions, air superiority, close air support, and precision strikes.

pilots generally with between 3 and 6 years of service), the Navy was unable to fully staff fighter pilot, surveillance and transport, and maritime patrol operational positions from fiscal years 2013 through 2017. The fighter pilot gap grew from 57 fighter pilots (12 percent of authorizations) in fiscal year 2013 to 136 fighter pilots (26 percent) in fiscal year 2017. The surveillance and transport pilot gap varied from 29 pilots (20 percent of authorizations) in fiscal year 2013 to 30 pilots (23 percent) in fiscal year 2017, while the maritime patrol community pilot gap decreased from 112 pilots (23 percent of authorizations) in fiscal year 2013 to 4 pilots (1 percent) in fiscal year 2017. Figure 16 compares the Navy active component fighter pilot, surveillance and transport, and maritime patrol communities' first tour staffing levels and authorizations for operational positions for fiscal years 2013 through 2017.

Figure 16: Navy's Active Component Fixed-Wing Pilot First Tour Pilot Actual Staffing Levels Compared with Authorizations for Operational Positions, Fiscal Years 2013-2017

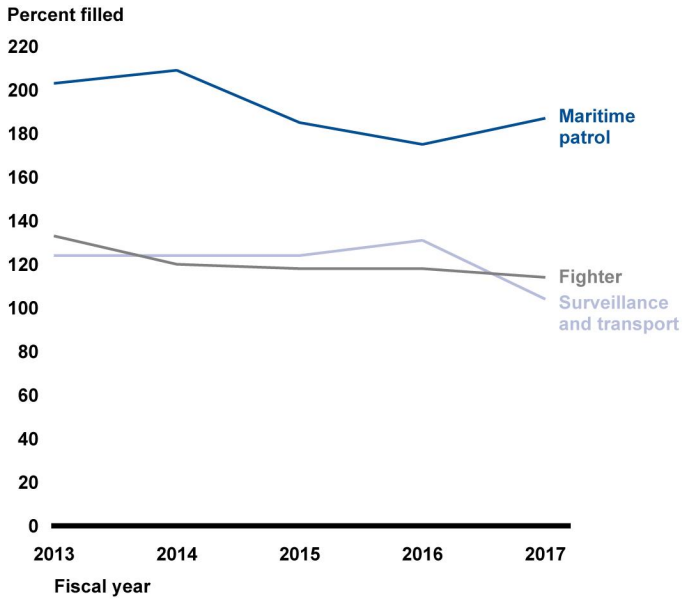


Source: GAO analysis of Navy data. | GAO-18-113

According to Navy fixed-wing aviator staffing levels and authorizations data for the Department Head milestone (i.e., a mid-career operational leadership tour for different aspects of squadron management for pilots with between about 11 and 13 years of service), the military service had more fighter, surveillance and transport, and maritime patrol aviators than authorizations for fiscal years 2013 through 2017. However, the surplus of fighter aviators compared with authorizations decreased from 68 aviators

(133 percent of authorizations) in fiscal year 2013 to 28 aviators (114 percent) in fiscal year 2017. Figure 17 compares the Navy active component fighter, surveillance and transport, and maritime patrol aviator communities' Department Head staffing levels and authorizations for operational positions for fiscal years 2013 through 2017.

Figure 17: Navy's Active Component Fixed-Wing Department Head Milestone Aviator Actual Staffing Levels Compared with Authorizations for Operational Positions, Fiscal Years 2013-2017



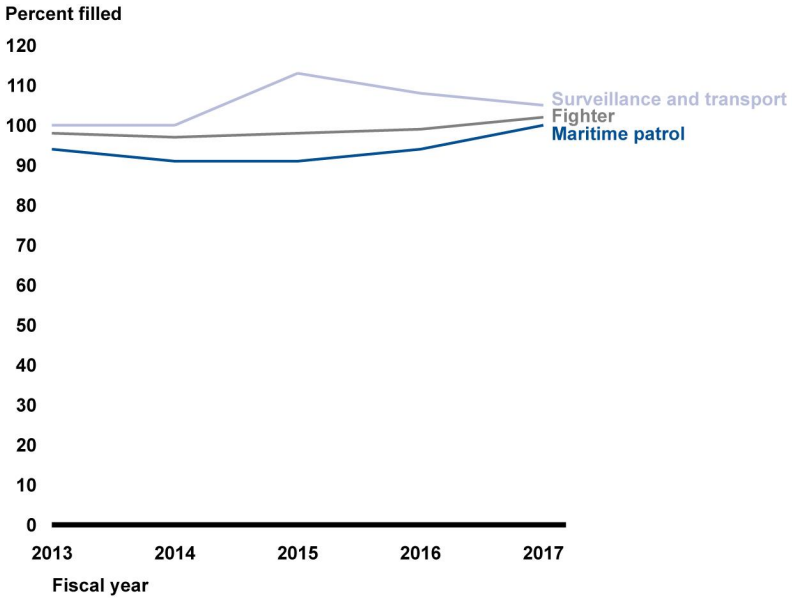
Source: GAO analysis of Navy data. | GAO-18-113

Note: These data include both pilots and Naval Flight Officers (non-pilot aviators responsible for navigation or weapon systems) because the Navy uses both types of personnel to staff Department Head positions. Navy officials told us that fluctuations in staffing levels at the Department Head milestone can be partially attributed to the timing of when these personnel move between assignments.

According to Navy fixed-wing aviator staffing levels and authorizations data for the Command milestone (i.e., a leadership tour for Commanders, including squadron commander, for aviators with between about 17 and 19 years of service) the number of fighter, surveillance and transport, and maritime patrol aviators compared with authorizations increased from fiscal years 2013 through 2017. For example, while the fighter pilot community had fewer aviators than authorizations in fiscal year 2013 (a gap totaling 2 percent of authorizations), it had a surplus of aviators in fiscal year 2017 (2 percent above authorizations). Figure 18 compares the Navy active component fighter, surveillance and transport, and

maritime patrol aviator communities' Command milestone staffing levels and authorizations for fiscal years 2013 through 2017.

Figure 18: Navy's Active Component Fixed-Wing Command Milestone Aviator Actual Staffing Levels Compared with Authorizations for Operational Positions, Fiscal Years 2013-2017



Source: GAO analysis of Navy data. | GAO-18-113

Note: These data include both pilots and Naval Flight Officers (non-pilot aviators responsible for navigation or weapon systems) because the Navy uses both types of personnel to staff Command positions. Navy officials told us that fluctuations in staffing levels at the Command milestone can be partially attributed to the timing of when these personnel move between assignments.

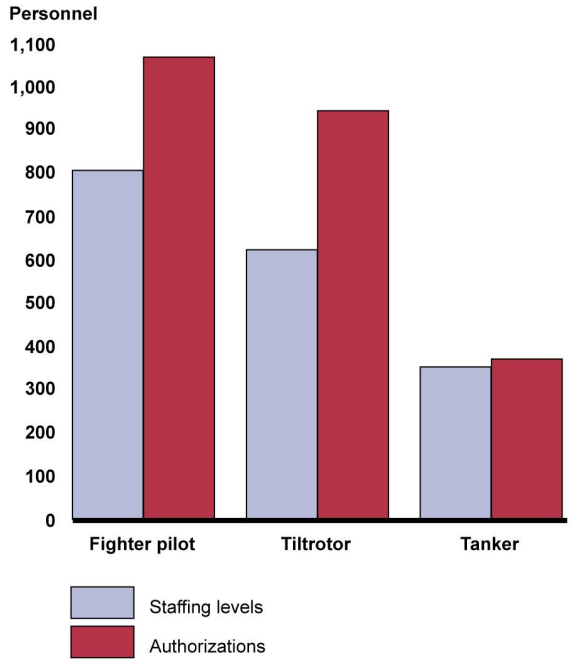
Appendix IV: Comparison of Marine Corps Pilot Staffing Levels and Authorizations for Fixed-Wing, Cockpit Operated Aircraft

The Marine Corps uses pilots from both the active and reserve components to staff fixed-wing, cockpit-operated (hereafter referred to as fixed-wing) aircraft pilot positions that Congress authorizes and funds through appropriations. These Marine Corps pilots staff a mix of operational and non-operational positions. Operational positions include both flying (e.g., combat pilot or instructor pilot positions) and non-flying positions (e.g., air controller in a ground infantry unit) that generally support combat operations. Non-operational positions are generally non-flying and include assignments to headquarters or combatant command positions, some of which can be staffed by other types of Marine Corps officers. This appendix compares Marine Corps pilot staffing levels with authorizations for operational and non-operational positions for all fixed-wing aircraft communities for fiscal years 2006 through 2017.

Marine Corps fixed-wing community pilots operate fighter, tiltrotor, and tanker aircraft. Fighter pilots operate tactical aircraft for air defense and close air support and attack missions, and include the EA-6B, AV-8B, F/A-18, and F-35. Tiltrotor pilots operate the MV-22—an aircraft that operates as a helicopter for takeoffs and landings and, once airborne, converts to a turboprop aircraft—and is used to transport combat troops and equipment. Tanker pilots operate the KC-130, an aircraft used for in-flight refueling and transport of troops and equipment.

According to Marine Corps data for the active component, the Marine Corps had fewer pilots than authorizations in all of its fixed-wing communities in fiscal year 2017. The Marine Corps forecasts this gap will persist through at least fiscal year 2023. Figure 19 shows the Marine Corps active component fixed-wing pilot staffing levels and authorizations for fiscal year 2017.

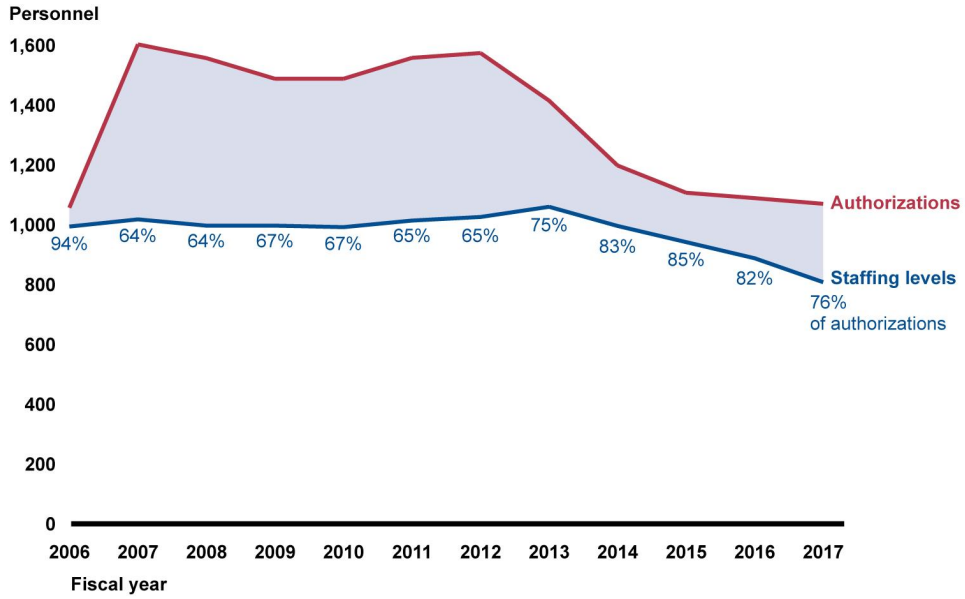
Figure 19: Marine Corps Fixed-Wing Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Year 2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

According to Marine Corps data for the active component, the Marine Corps had fewer fighter pilots than authorizations from fiscal year 2006 through fiscal year 2017. This gap grew from 63 fighter pilots (6 percent of authorizations) in fiscal year 2006 to 322 fighter pilots (24 percent) in fiscal year 2017. Figure 20 shows the comparison of the Marine Corps' active component fighter pilot staffing levels and authorizations for fiscal years 2006 through 2017.

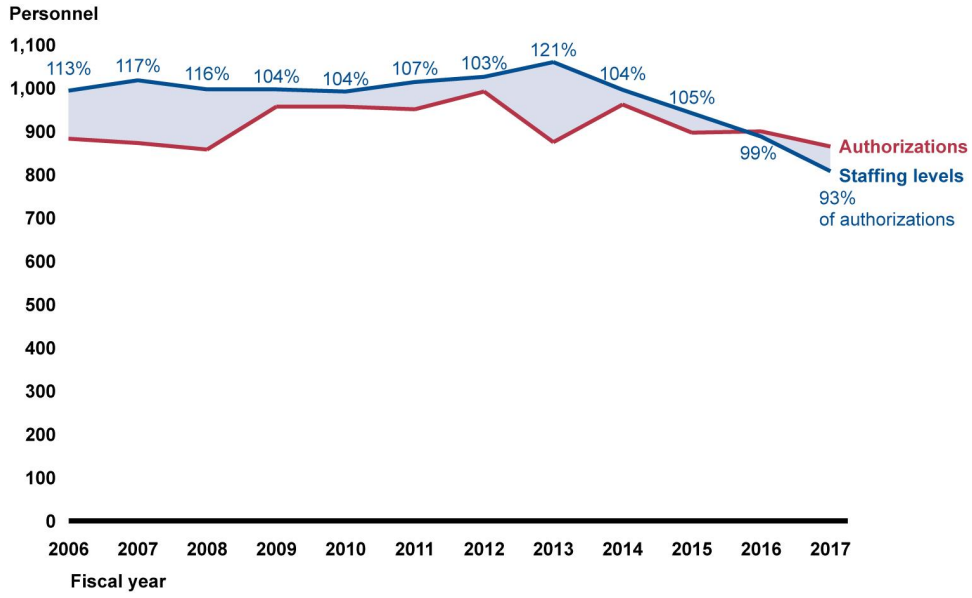
Figure 20: Marine Corps' Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

According to Marine Corps data for the active component, the Marine Corps had fewer fighter pilots than operational positions in fiscal years 2016 and 2017. Figure 21 shows the comparison of the Marine Corps' active component fighter pilot staffing levels with operational positions for fiscal years 2006 through 2017.

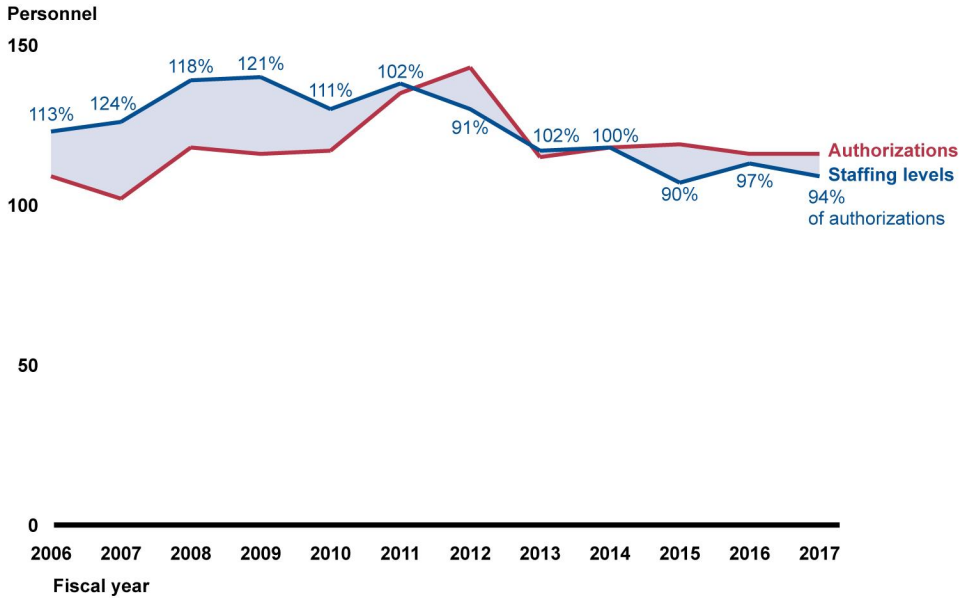
Figure 21: Marine Corps' Active Component Fighter Pilot Actual Staffing Levels Compared with Operational Positions, Fiscal Years 2006-2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

According to Marine Corps data for the reserve component, the Marine Corps Reserve, a community that the Marine Corps uses to augment its available staffing levels of active duty pilots, had more fighter pilots than authorizations for 8 of 12 years in fiscal years 2006 through 2017. The Marine Corps had a gap of seven reserve component fighter pilots (6 percent of authorizations) for fiscal year 2017. Figure 22 shows the Marine Corps Reserve fighter pilot staffing levels and authorizations for fiscal years 2006 through 2017.

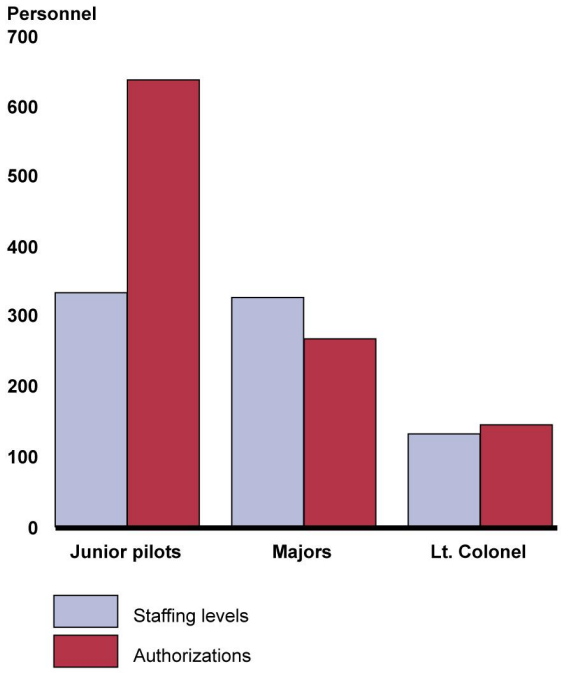
Figure 22: Marine Corps' Reserve Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

According to Marine Corps data for the active component, the Marine Corps had fewer junior fighter pilots—those pilots between grades Officer-1 and Officer-3—than authorizations from fiscal year 2006 through fiscal year 2017. Marine Corps officials told us that, as a result, the Marine Corps assigns pilots at the Officer-4 grade to staff positions designated for junior pilots. For example, in fiscal year 2017 the Marine Corps needed an additional 309 junior fighter pilots (48 percent of authorizations) to fill all authorizations. Figure 23 shows the comparison of the Marine Corps active component junior and senior fighter pilot staffing levels and authorizations for fiscal year 2017.

Figure 23: Marine Corps' Active Component Junior and Senior Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Year 2017

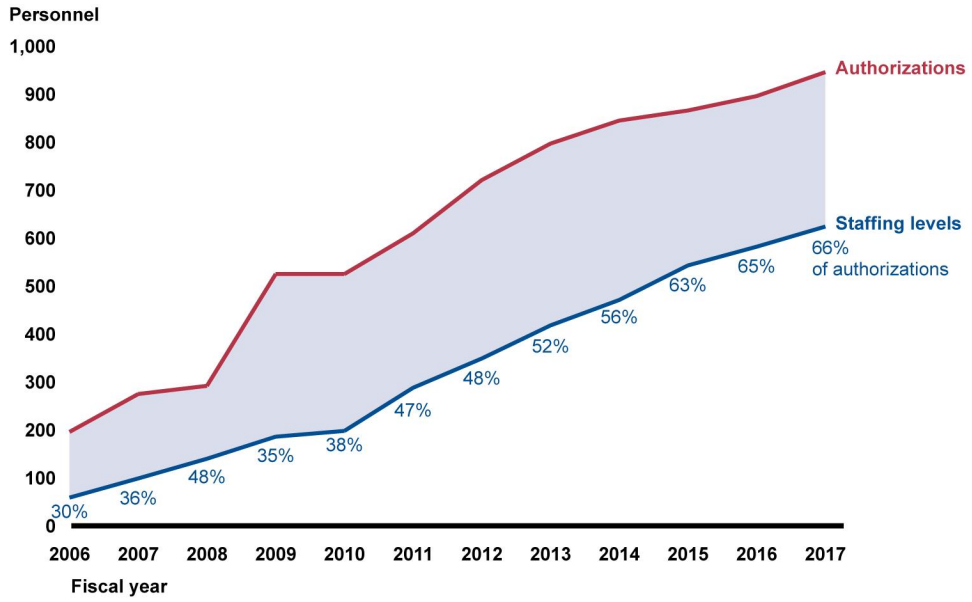


Source: GAO analysis of Marine Corps data. | GAO-18-113

Note: A junior pilot is an officer at the rank of Officer-1 through Officer-3. Majors are officers at the rank of Officer-4, and Lieutenant Colonels are officers at the rank of Officer-5. Both Majors and Lieutenant Colonels are considered to be senior officers.

According to Marine Corps data for the active component, the Marine Corps had fewer tiltrotor pilots than authorizations from fiscal year 2006 through fiscal year 2017. Tiltrotor pilot staffing levels and authorizations have increased substantially from fiscal year 2006 through fiscal year 2017. Further, the gap between the staffing levels and authorizations has decreased from 137 tiltrotor pilots (70 percent of authorizations) in fiscal year 2006 to 322 tiltrotor pilots (34 percent of authorizations) in fiscal year 2017. Figure 24 shows the comparison of the Marine Corps active component tiltrotor pilot staffing levels and authorizations in fiscal years 2006 through 2017.

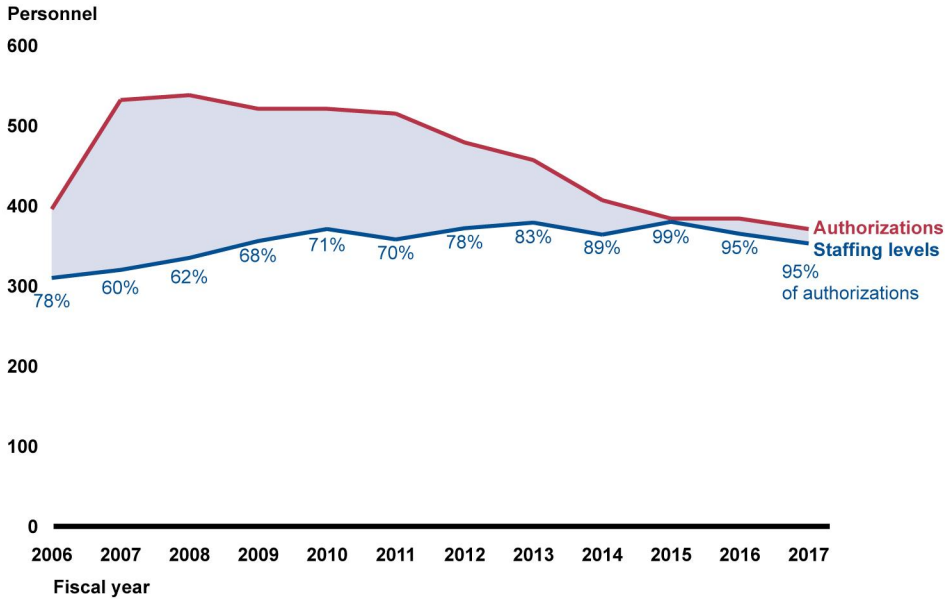
Figure 24: Marine Corps' Active Component Tiltrotor Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

According to Marine Corps active component data, the Marine Corps had fewer tanker pilots than authorizations from fiscal year 2006 through fiscal year 2017. This gap decreased from 86 tanker pilots in fiscal year 2006 (22 percent of authorizations) to 18 tanker pilots (5 percent of authorizations) in fiscal year 2017. Figure 25 shows the comparison of the Marine Corps active component tanker pilot staffing levels and authorizations for fiscal years 2006 through 2017.

Figure 25: Marine Corps' Active Component Tanker Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017



Source: GAO analysis of Marine Corps data. | GAO-18-113

Appendix V: Initiatives Implemented by the Air Force to Address Reported Fighter Pilot Shortages

In March 2016, the Chief of Staff of the Air Force created the Fighter Enterprise Tiger Team to address the fighter pilot shortage that the Air Force identified. In February 2017, the Air Force effort was expanded to include all rated personnel and renamed the Aircrew Crisis Task Force.[1] According to Air Force officials, the task force has focused on the following areas to improve fighter pilot retention: work/life balance, quality of service, and monetary compensation. In August 2017 the Aircrew Crisis Task Force held a Dedicated Aircrew Retention Team Summit that included organizing discussion groups with pilots to obtain information on retention challenges. According to Air Force officials, in September 2017, the task force presented 25 of the 44 recommendations developed at the summit to the Chief of Staff of the Air Force and as of November 2017 the Chief of Staff had decided to implement 2 of them immediately and conduct additional analysis on the other 23. The recommendations being analyzed include reducing the length and number of deployments for fighter pilots and converting some non-flying fighter pilot positions to UAS pilot positions. As of November 2017, these efforts had resulted in 37 implemented initiatives (see table 2).

Table 2: Air Force Fighter Enterprise Tiger Team and Aircrew Crisis Task Force Initiatives Implemented as of November 2017

Initiative	Target community	Implementation date
Encourage fighter wings to send fighter pilots and aircraft to undergraduate pilot training locations to advertise the fighter pilot career.	Fighter pilots	Summer 2016
Provide mentoring training to commanders of fighter wings and squadrons during major command (MAJCOM) squadron commanders' courses.	Fighter pilots	Summer 2016

[1] Rated personnel are servicemembers with an aeronautical rating including pilots, combat systems officers, and air battle managers.

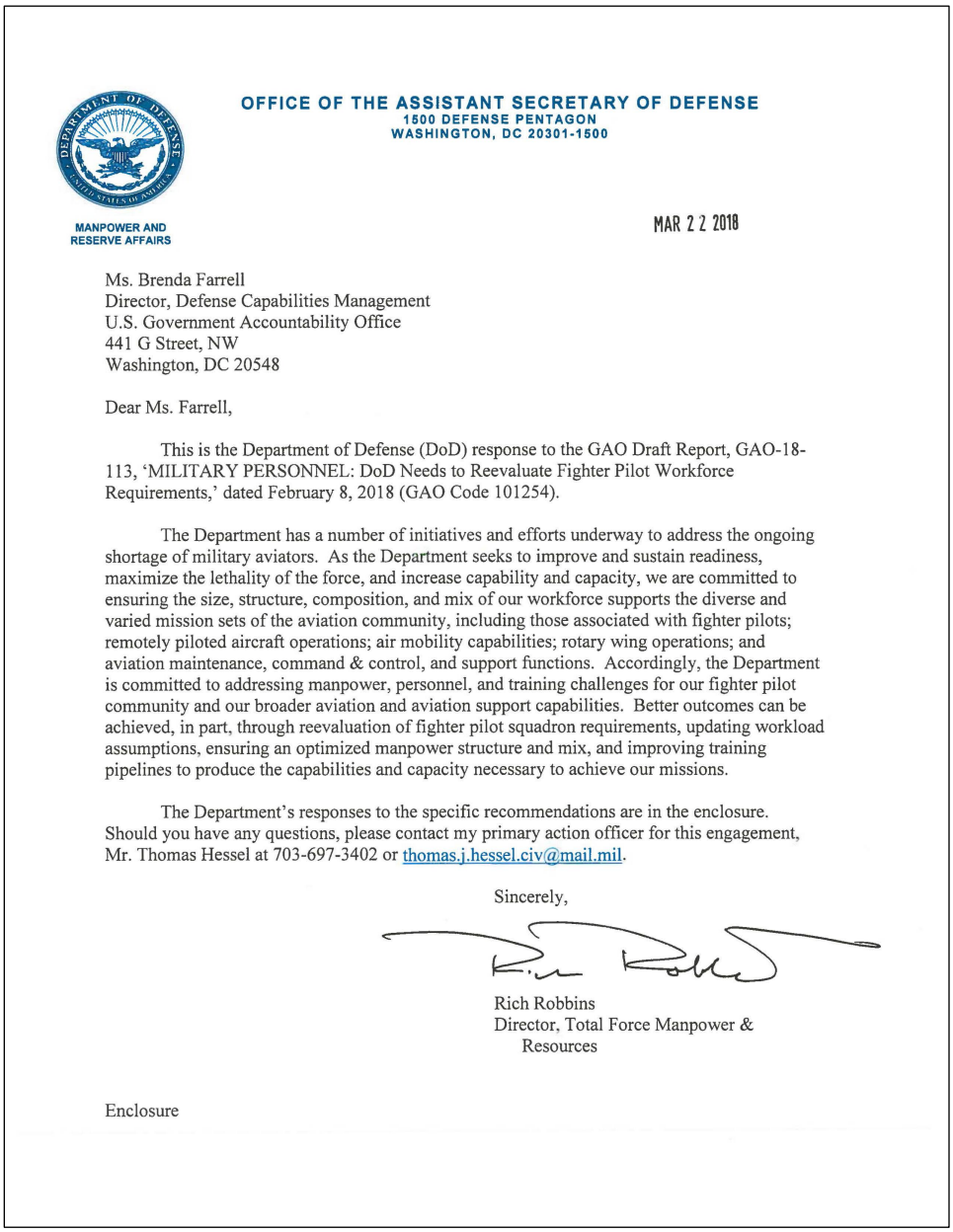
Initiative	Target community	Implementation date
Reviewed additional duties and reduced 29 additional administrative duties and 31 computer-based training courses.	All Air Force personnel	August 2016
Established Total Force Aircrew Management–Assignment Augmentation Program to allow 30 Air Force Guard or Reserve component pilots to fill vacant active duty assignments (both flying and non-flying) on 1-3 year orders.	Fighter pilots	Fall 2016
Inform junior fighter pilots of multiple career paths that lead to leadership opportunities through home station mentoring and deliberate training at squadron officer school.	Fighter pilots	Fall 2016
Educate fighter squadron leaders on the assignment process during MAJCOM squadron commanders' course.	Fighter pilots	Fall 2016
Place additional administrative staff in fighter squadrons. Currently implemented for Air Combat Command, in progress for U.S. Air Forces Europe, Pacific Air Forces, and Air Education and Training Command.	Fighter pilots	Fall 2016
Review and validate 365-day deployments. Has reduced 24 positions designated for 365-day deployments to 179 days, and limited fighter pilot 365-day deployments only to those for command or joint staff assignments.	All aircrew	Fall 2016
Secured $1,500/month in assignment incentive pay from six host nations to offset the negative retention impacts of foreign military sales assignments.	Fighter Pilots and weapons system officers	Fall 2016
Voluntary limited period of active duty program offers Guard and Reserve component personnel, including fighter pilots, the ability to return to active duty for 3-year orders, at a location of their choice, with no obligation to deploy. In the fighter pilot community, these personnel will generally staff positions that would otherwise go unstaffed due to the fighter pilot shortage.	All rated personnel	Fall 2016
Reinstate headquarters Air Force fighter awards.	Fighter pilots	September 2016
Allow officers to decline professional military education without being forced to separate.	All officers	November 2016
Create social media accounts to inform total force pilots of Air Force efforts to increase fighter pilot retention.	Fighter pilots	December 2016
Incentivize non-command 365-day deployments by offering pilots 2 more years of time on station or their choice of follow-on assignment.	All rated personnel	Spring 2017
Open fighter pilot individual deployments to other rated communities to mitigate the retention impact on fighter pilots.	Fighter pilots	Spring 2017
Air Combat Command secured funding that will allow the Air Force reserve component to staff 53 rated deployments in Fiscal Year 2018.	All rated personnel	Spring 2017
Implement comprehensive messaging campaign to ensure pilots are aware of Air Force efforts to mitigate aircrew shortfalls.	All aircrew	Spring 2017
Advertise 179/365-day deployments to reserve component.	Fighter pilots	Spring 2017
Drop average time on station during first combat-coded assignment from 2 years 8 months to 2 years 4 months to maximize available sorties for experiencing new pilots.	Fighter pilots	May 2017
Establish two new F-16 formal training units to help increase production to 285 active duty/335 total force fighter pilots per year.	Fighter pilots	June 2017

Initiative	Target community	Implementation date
Advocate for congressional increases to aviation retention bonuses and aviation pay. Increases to both programs were authorized by the fiscal year 2017 National Defense Authorization Act.	Fighter pilots	June 2017
Chief of Staff of the Air Force directed a change to the process by which officers were selected for professional military education opportunities. The prior process contributed to retention problems as officers who were notified of non-selection were more likely to leave the Air Force. The new process provides wing leadership with increased authority to select officers for these opportunities.	All officers	July 2017
Adjust aviation bonus program to create eligibility for senior fighter pilots whose initial aviation bonus contract has expired.	All pilots	August 2017
Senior Pilot Transition Program selects senior instructor pilots in the fighter community to transition into the F-35 community to address the F-35 instructor pilot shortage. Service commitment of selected pilots is extended by 3 years, and pilots do not have to deploy.	Fighter pilots	August 2017
Developed Combat Air Forces Fellowship program that allows 14 pilots to complete a residential professional military education assignment concurrently with a staff assignment, reducing the total time for these assignments from 3 years to 2 years, allowing for faster career progression.	Fighter pilots	August 2017
Address absorption limitations by sending inexperienced fighter pilots to the Navy to fly E/A-18 Growlers at Naval Air Station Whidbey Island, assist the Navy with fighter pilot production pipeline issues, and enhance tactical joint collaboration between the Navy and the Air Force.	Fighter pilots	Fall 2017
Increase experience levels of junior fighter pilots by placing them in aggressor squadrons.	Fighter pilots	Fall 2017
Reduce fighter pilot assignments to non-flying positions such as Army Air Liaison Officer, Reserve Officer Training Corps, and international assignments to train allied pilots on U.S. fighter aircraft.	Fighter pilots	September 2017
Create virtual staff positions that allow rated personnel to staff non-flying positions remotely, avoid relocating their families, and continue to fly enough to maintain currency so as to avoid a costly transition course to regain their flight certification.	All rated	September 2017
Second Assignment in Place program allows wing commanders to offer senior fighter pilots and combat system officers up to 6 years of continuous time on station at training and test squadrons.	Fighter pilots and combat system officers	September 2017
Placed 28 additional active duty fighter pilots into Air National Guard squadrons to provide experience opportunities.	Fighter pilots	October 2017
Develop an F-35 exchange with the Marine Corps so Air Force inexperienced pilots can gain experience and help to offset limitations in the Marine Corps fighter pilot production pipeline.	Fighter pilots	October 2017
Adjust exercise plan to enable eight fighter wings to execute a 1:5 deploy to dwell ratio, increasing time at home station for fighter pilots by 25-50 percent.	Air Combat Command fighter pilots	October 2017
Offer through the Voluntary Retired Return to Active Duty program retired fighter pilots the opportunity to return to active duty for non-flying and flying assignments.	All rated personnel	October 2017
Update software used to manage fighter pilot assignments to make the process more transparent and flexible.	Fighter pilots	Test started in November 2017

Initiative	Target community	Implementation date
Offered experienced fighter pilots a “follow-on” assignment (i.e., guaranteeing the pilots’ choice of next assignment in return for volunteering for assignments that are difficult to staff).	Fighter pilots	November 2017
Preventative medical care for back and neck injuries.	Fighter pilots	Implemented at four locations (Portland Air National Guard Base, Kunsan Air Base, Royal Air Force Lakenheath, and Luke Air Force Base) as of November 2017, with funding for wider implementation scheduled through fiscal year 2020

Source: GAO analysis of Air Force information. | GAO-18-113

Appendix VI: Comments from the Department of Defense



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
1500 DEFENSE PENTAGON
WASHINGTON, DC 20301-1500

MANPOWER AND RESERVE AFFAIRS

MAR 2 2 2018

Ms. Brenda Farrell
Director, Defense Capabilities Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Farrell,

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-18-113, 'MILITARY PERSONNEL: DoD Needs to Reevaluate Fighter Pilot Workforce Requirements,' dated February 8, 2018 (GAO Code 101254).

The Department has a number of initiatives and efforts underway to address the ongoing shortage of military aviators. As the Department seeks to improve and sustain readiness, maximize the lethality of the force, and increase capability and capacity, we are committed to ensuring the size, structure, composition, and mix of our workforce supports the diverse and varied mission sets of the aviation community, including those associated with fighter pilots; remotely piloted aircraft operations; air mobility capabilities; rotary wing operations; and aviation maintenance, command & control, and support functions. Accordingly, the Department is committed to addressing manpower, personnel, and training challenges for our fighter pilot community and our broader aviation and aviation support capabilities. Better outcomes can be achieved, in part, through reevaluation of fighter pilot squadron requirements, updating workload assumptions, ensuring an optimized manpower structure and mix, and improving training pipelines to produce the capabilities and capacity necessary to achieve our missions.

The Department's responses to the specific recommendations are in the enclosure. Should you have any questions, please contact my primary action officer for this engagement, Mr. Thomas Hessel at 703-697-3402 or thomas.j.hessel.civ@mail.mil.

Sincerely,

Rich Robbins
Director, Total Force Manpower & Resources

Enclosure

GAO Draft Report Dated February 8, 2018
GAO-18-113 (GAO CODE 101254)

"MILITARY PERSONNEL: DOD NEEDS TO REEVALUATE FIGHTER PILOT WORKFORCE REQUIREMENTS"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The GAO recommends that the Secretary of the Air Force ensure that the Director of Operations (AF/A3O) and the Air Force Manpower Analysis Agency reevaluate fighter pilot squadron requirements, to include updating current assumptions of fighter pilot workload, and assessing the impact of future incorporation of UAS platforms into combat aviation.

DoD RESPONSE: Concur. The Department notes that across the Air Force, many organizations and offices, in addition to the Director of Operations and Air Force Manpower Analysis Agency will play integral roles in determining the future size and mix of manpower requirements for fighter pilot squadrons.

Over the past decade, the Air Force has decreased overall manpower authorizations while simultaneously growing space, cyber, and persistent intelligence, surveillance, and reconnaissance (ISR) authorizations. As a result, fighter squadron crew ratios dropped from 1.5 pilots per aircraft to 1.25. At the same time, thousands of support authorizations were eliminated, while changes to aircraft tactics and technology increased training requirements. The result of these actions was an increase in workload for the fighter pilots. Consequently, the Air Force began mitigating the lack of fighter squadron administrative support in 2016 by funding contracted support in each fighter squadron to accomplish non-operational tasks. That effort continued in 2017 with the Air Force funding an additional 1,600 Commander Support Staff (CSS) authorizations for all squadrons. The Air Force will also review fighter wing manpower determinants to accurately account for fighter pilot workloads and analyze support organization manning to ensure adequate support to operational units.

The burgeoning Remotely Piloted Aircraft (RPA) community has already replaced some fighter pilots on staffs with RPA pilots. The Air Force is committed to ensuring efficient use of limited manpower resources and will closely monitor ways to leverage manpower in the growing RPA community to mitigate fighter pilot staffing shortfalls. Finally, the unique "deployed in place" operations of many RPA aircrews demands the Air Force apply the same scrutiny to associated operational and support manpower determinants to ensure lessons learned while addressing fighter pilot workloads are also applied in this community.

RECOMMENDATION 2: The GAO recommends that the Secretary of the Navy ensure that the Chief of Naval Operations reevaluate fighter pilot squadron requirements, to include updating current assumptions of fighter pilot workload, and assessing the impact of future incorporation of UAS platforms into combat aviation.

2

DoD RESPONSE: Concur. The Department notes that the across the Navy, many organizations and offices, including the resource sponsor, Naval Air Forces, will play integral roles in determining the future size and mix of manpower requirements for fighter pilot squadrons.

RECOMMENDATION 3: The Secretary of the Navy should ensure that the Commandant of the Marine Corps and the Deputy Commandant for Aviation reevaluate fighter pilot squadron requirements.

DoD RESPONSE: Concur. The Department notes that across the Marine Corps, many organizations and offices in addition to the Deputy Commandant for Aviation, play integral roles in the continuous evaluation and determination regarding current and future size and mix of manpower requirements for fighter and attack squadrons.

3

Appendix VII: GAO Contact and Staff Acknowledgments

GAO Contact

Brenda S. Farrell, (202) 512-3604 or farrellb@gao.gov

Staff Acknowledgments

In addition to the contact named above, key contributors to this report were Lori Atkinson, Assistant Director; Vincent Buquicchio, Timothy Carr, Mae Jones, Foster Kerrison, Amie Lesser, Michael Silver, and Nell Williams.

Appendix VIII: Accessible Data

Data Tables

Data Table for Air Force's Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	4018	4210
2007	3830	4154
2008	3907	4110
2009	3803	4011
2010	3669	3718
2011	3677	3542
2012	3331	3395
2013	3267	3466
2014	3011	3457
2015	2959	3653
2016	2770	3643
2017	2776	3781

Data Table for Figure 3: Air Force's Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	4018	4210
2007	3830	4154
2008	3907	4110
2009	3803	4011
2010	3669	3718
2011	3677	3542
2012	3331	3395
2013	3267	3466
2014	3011	3457
2015	2959	3653
2016	2770	3643
2017	2776	3781

Data Table for Figure 4: Navy Fighter Pilot First Operational Tour Actual Staffing Levels Compared with Authorizations, Fiscal Years 2013-2017

Year	Staffing levels	Authorizations
2013	486	429
2014	510	410
2015	523	377
2016	508	419
2017	516	380

Data Table for Figure 5: Marine Corps' Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	994	1057
2007	1018	1603
2008	997	1557
2009	997	1488
2010	992	1488
2011	1014	1558
2012	1026	1574
2013	1060	1415
2014	996	1198
2015	942	1107
2016	888	1089
2017	808	1070

Data Table for Figure 6: Air Force Fighter Pilot Retention Bonus Take Rate and Maximum Contract Amounts Offered, Fiscal Years 2010-2017

Year	Take rates	Contract amounts
2010	125	60
2011	125	63.8
2012	125	57.7
2013	225	63
2014	225	46
2015	225	47.8
2016	225	39.5
2017	455	34.6

Data Table for Figure 7: Navy's Active Duty Fixed-Wing Department Head Pilot Retention Bonus Take Rate, Fiscal Years 2013-2017

Year	Fighter pilot	Surveillance and transport	Maritime patrol
2013	59	72	122
2014	68	100	77
2015	88	108	100
2016	53	29	127
2017	48	33	133

Data Table for Figure 8: Comparison of Air Force's Fixed-Wing Pilot Actual Staffing Levels with Authorizations, Fiscal Year 2017

Pilot	Staffing Levels	Authorizations
Fighter pilot	2739	3781
Bomber pilot	839	909
Mobility pilot	5165	4997
Surveillance pilot	970	777
Special operations pilot	1420	1615

Data Table for Figure 9: Air Force's Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	4018	4210
2007	3830	4154
2008	3907	4110
2009	3803	4011
2010	3669	3718
2011	3677	3542
2012	3331	3395
2013	3267	3466
2014	3011	3457
2015	2959	3653
2016	2770	3643
2017	2776	3781

Data Table for Figure 10: Air Force's Reserve Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	1670	2042
2007	1640	2010
2008	1496	1956
2009	1493	1961
2010	1466	1928
2011	1404	1872
2012	1364	1794
2013	1325	1733
2014	1282	1668
2015	1278	1686
2016	1294	1612
2017	1291	1562

Data Table for Figure 11: Air Force's Active Component Bomber Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	932	806
2007	915	817
2008	895	845
2009	921	876
2010	911	770
2011	943	812
2012	938	853
2013	927	852
2014	842	853
2015	895	950
2016	872	940
2017	774	909

Data Table for Figure 12: Air Force's Active Component Mobility Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	6266	5035
2007	6251	5068
2008	6104	5122
2009	6294	5199
2010	6625	5169
2011	6832	5195
2012	6582	5255
2013	6486	5156
2014	5858	5044
2015	5872	5071
2016	5377	4943
2017	5261	4997

Data Table for Figure 13: Air Force's Active Component Surveillance Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	962	722
2007	940	739
2008	860	750
2009	879	754
2010	925	830
2011	955	884
2012	1002	1151
2013	1070	1156
2014	1100	990
2015	1088	809
2016	1002	828
2017	997	777

Data Table for Figure 14: Air Force's Active Component Special Operations Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	1395	1424
2007	1331	1531
2008	804	1227
2009	818	1160
2010	1026	1271
2011	1157	1342
2012	1235	1514
2013	1287	1553
2014	1379	1591
2015	1349	1652
2016	1402	1631
2017	1388	1616

Data Table for Figure 15: Navy's Active Component Fixed-Wing Pilot Actual Staffing Levels, by Community, Fiscal Years 2011-2017

Year	Fighter pilot	Surveillance and transport	Maritime patrol
2011	1669	408	1233
2012	1680	387	1270
2013	1735	376	1273
2014	1712	380	1260
2015	1707	410	1262
2016	1642	422	1269
2017	1548	392	1200

Data Table for Figure 16: Navy's Active Component Fixed-Wing Pilot First Tour Pilot Actual Staffing Levels Compared with Authorizations for Operational Positions, Fiscal Years 2013-2017

Year	Fighter pilot	Surveillance and transport	Maritime patrol
2013	88	80	77
2014	80	72	66
2015	72	77	73
2016	82	87	93
2017	74	77	99

Data Table for Figure 17: Navy's Active Component Fixed-Wing Department Head Milestone Aviator Actual Staffing Levels Compared with Authorizations for Operational Positions, Fiscal Years 2013-2017

Year	Fighter pilot	Surveillance and transport	Maritime patrol
2013	133	124	203
2014	120	124	209
2015	118	124	185
2016	118	131	175
2017	114	104	187

Data Table for Figure 18: Navy's Active Component Fixed-Wing Command Milestone Aviator Actual Staffing Levels Compared with Authorizations for Operational Positions, Fiscal Years 2013-2017

Year	Fighter pilot	Surveillance and transport	Maritime patrol
2013	98	100	94
2014	97	100	91
2015	98	113	91
2016	99	108	94
2017	102	105	100

Data Table for Figure 19: Marine Corps Fixed-Wing Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Year 2017

Pilot	Staffing Levels	Authorizations
Fighter pilot	808	1070
Tiltrotor	624	946
Tanker	353	371

Data Table for Figure 20: Marine Corps' Active Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	994	1057
2007	1018	1603
2008	997	1557
2009	997	1488
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2015	942	1107
2016	888	1089
2017	808	1070

Data Table for Figure 21: Marine Corps' Active Component Fighter Pilot Actual Staffing Levels Compared with Operational Positions, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	994	883
2007	1018	873
2008	997	858
2009	997	957
2010	992	957
2011	1014	951
2012	1026	992
2013	1060	875
2014	996	962
2015	942	897
2016	888	900
2017	808	865

Data Table for Figure 22: Marine Corps' Reserve Component Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	123	109
2007	126	102
2008	139	118
2009	140	116
2010	130	117
2011	138	135
2012	130	143
2013	117	115
2014	118	118
2015	107	119
2016	113	116
2017	109	116

Data Table for Figure 23: Marine Corps' Active Component Junior and Senior Fighter Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Year 2017

Staff	Staffing Level	Authrizations
Junior pilots	340	649
Majors	333	273
Lt. Colonel	135	148

Data Table for Figure 24: Marine Corps' Active Component Tiltrotor Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	59	196
2007	99	275
2008	140	292
2009	186	525
2010	198	525
2011	288	610
2012	349	721
2013	418	797
2014	471	845
2015	543	866
2016	582	896
2017	624	946

Data Table for Figure 25: Marine Corps' Active Component Tanker Pilot Actual Staffing Levels Compared with Authorizations, Fiscal Years 2006-2017

Year	Staffing levels	Authorizations
2006	310	396
2007	320	532
2008	335	538
2009	356	521
2010	371	521
2011	358	515
2012	372	479
2013	379	457
2014	364	407
2015	380	384
2016	365	384
2017	353	371

Agency Comment Letter

Text of Appendix VI: Comments from the Department of Defense

Page 1

Dear Ms. Farrell,

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Sincerely,

Rich Robbins

Director, Total Force Manpower & Resources

Enclosure

Page 2

GAO Draft Report Dated February 8, 2018
GAO-18-113 (GAO CODE 101254)

"MILITARY PERSONNEL: DOD NEEDS TO REEVALUATE FIGHTER PILOT WORKFORCE REQUIREMENTS"
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DoD RESPONSE:

Concur. The Department notes that across the Air Force, many organizations and offices, in addition to the Director of Operations and Air Force Manpower Analysis Agency will play integral roles in determining the future size and mix of manpower requirements for fighter pilot squadrons.

Over the past decade, the Air Force has decreased overall manpower authorizations while simultaneously growing space, cyber, and persistent intelligence, surveillance, and reconnaissance (ISR) authorizations. As a result, fighter squadron crew ratios dropped from 1.5 pilots per aircraft to 1.25. At the same time, thousands of support authorizations were eliminated, while changes to aircraft tactics and technology increased training requirements. The result of these actions was an increase in workload for the fighter pilots. Consequently, the Air Force began mitigating the lack of fighter squadron administrative support in 2016 by funding contracted support in each fighter squadron to accomplish non-operational tasks. That effort continued in 2017 with the Air Force funding an additional 1,600 Commander Support Staff (CSS) authorizations for all squadrons. The Air Force will also review fighter wing manpower determinants to accurately account for fighter pilot workloads and analyze support organization manning to ensure adequate support to operational units.

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The GAO recommends that the Secretary of the Navy ensure that the Chief of Naval Operations reevaluate fighter pilot squadron requirements, to include updating current assumptions of fighter pilot workload, and assessing the impact of future incorporation of UAS platforms into combat aviation.

Page 3

DoD RESPONSE:

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Related GAO Products

Military Personnel: Actions Needed to Better Position the Navy and the Marine Corps to Support Expanding Unmanned Systems Operations. GAO-18-162. Washington, D.C.: February 6, 2018.

Department of Defense: Actions Needed to Address Five Key Mission Challenges. GAO-17-369. Washington, D.C.: June 13, 2017.

DOD Training: DOD Has Taken Steps to Assess Common Military Training. GAO-17-468. Washington, D.C.: May 23, 2017.

Navy Force Structure: Actions Needed to Ensure Proper Size and Composition of Ship Crews. GAO-17-413. Washington, D.C.: May 18, 2017.

High Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others. GAO-17-317. Washington, D.C.: February 15, 2017.

Military Compensation: Additional Actions Are Needed to Better Manage Special and Incentive Pay Programs. GAO-17-39. Washington, D.C.: February 3, 2017.

Unmanned Aerial Systems: Air Force and Army Should Improve Human Capital Planning for Pilot Workforces. GAO-17-53. Washington, D.C.: January 31, 2017.

Unmanned Aerial Systems: Further Actions Needed to Fully Address Air Force and Army Pilot Workforce Challenges. GAO-16-527T. Washington, D.C.: March 16, 2016.

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Air Force: Actions Needed to Strengthen Management of Unmanned Aerial System Pilots. GAO-14-316. Washington, D.C.: April 10, 2014.

Tactical Aircraft: DOD's Ability to Meet Future Requirements Is Uncertain, with Key Analyses Needed to Inform Upcoming Investment Decisions. GAO-10-789. Washington, D.C.: July 29, 2010.

Unmanned Aircraft Systems: Comprehensive Planning and a Results-Oriented Training Strategy Are Needed to Support Growing Inventories. GAO-10-331. Washington, D.C.: March 26, 2010.

Human Capital: Key Principles for Effective Strategic Workforce Planning. GAO-04-39. Washington, D.C.: December 11, 2003.

Military Personnel: Actions Needed to Better Define Pilot Requirements and Promote Retention. GAO/NSIAD-99-211. Washington, D.C.: August 20, 1999.

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