United States Government Accountability Office

Testimony

Before the Airland Subcommittee, Armed Services Committee, U.S. Senate

For Release on Delivery
Expected at 2:30 p.m. ET
Wednesday, March 16, 2016

UNMANNED AERIAL SYSTEMS

Further Actions Needed to Fully Address Air Force and Army Pilot Workforce Challenges

Statement of Brenda S. Farrell, Director, Defense Capabilities and Management

Accessible Version

GAO Highlights

Highlights of GAO-16-527T, a testimony before Subcommittee on Airland, Committee on Armed Services, U.S. Senate

March 16, 2016

UNMANNED AERIAL SYSTEMS

Further Actions Needed to Fully Address Air Force and Army Pilot Workforce Challenges

Why GAO Did This Study

In recent years, the size, sophistication, and cost of the Department of Defense's (DOD) UAS portfolio has grown considerably, as has the demand for trained UAS pilots.

This testimony discusses, among other things, DOD's progress in (1) taking actions to strengthen the management of Air Force UAS pilots and (2) addressing challenges the Army faces to ensure that its UAS pilots complete their required training and receive high-quality training.

GAO's statement is based on information from its reports issued in April 2014 on the Air Force UAS pilots and May 2015 on Army and Air Force UAS pilot training. For those reports, GAO reviewed DOD guidance on training UAS pilots and other relevant documents, examined nongeneralizeable training records of Air Force UAS units, conducted nongeneralizeable focus groups with active duty UAS pilots who were selected to cover a range of ranks and other factors at 6 installations, and interviewed DOD and military services officials. GAO obtained updates from DOD and military services officials for this statement.

What GAO Recommends

In April 2014 and May 2015, GAO made ten recommendations to DOD to improve the Air Force's management of UAS pilots, address Army UAS pilot training challenges, and enhance DOD coordination of UAS pilot training. DOD initiated action on most of these recommendations.

View GAO-16-527T. For more information, contact Brenda S. Farrell at (202) 512-3604 or farrellb@gao.gov.

What GAO Found

In April 2014, GAO reported on several issues the Air Force faced in managing its UAS pilots, and while the Air Force has taken some actions since then, it has not fully implemented GAO's recommendations to strengthen its management.

- **Personnel Requirements**: GAO reported that the Air Force had not accurately identified the number of UAS pilots required to accomplish its mission nor had it established a minimum number of pilots needed. As of March 2016, the Air Force had not updated personnel requirements and until it does, the Air Force will not know if it is assuming unacceptable levels of risk to accomplishing the mission and ensuring pilot safety.
- **Recruiting and Retaining**: GAO reported that the Air Force had faced challenges recruiting UAS pilots and might also face retention challenges in the future. The Air Force has taken steps to recruit more UAS pilots and offers a monthly assignment incentive pay to help retain pilots, but issues related to recruiting UAS pilots may warrant the Air Force's attention.
- **Alternative Sources**: GAO reported that the Air Force had not evaluated the use of alternative personnel populations such as enlisted or civilian personnel to help it sustain required UAS pilot staffing levels. In 2015, the Air Force announced it would test using enlisted personnel but has not formally evaluated using DOD civilian personnel as UAS pilots and thus may lack information on potential options for meeting personnel requirements.
- **Training**: GAO reported that the Air Force had faced challenges training its UAS pilots due to UAS pilot shortages, which impacted its ability to produce new pilots. Fully implementing GAO's recommendations pertaining to management of UAS pilots would better position the Air Force to address its training challenges.
- **Promotions**: GAO reported that the Air Force monitors the promotion rates of UAS pilots but had not analyzed factors that may relate to their low promotion rates. Until the Air Force does this analysis, it is unclear whether its actions to raise promotion rates are appropriate.

The Army has initiated steps to address challenges related to UAS pilots completing their required training and its use of less experienced instructors, which could affect training quality. In May 2015, GAO found that Army unit status reports did not require UAS pilot training information, and thus the Army did not know the extent pilots had been trained and were ready to deploy. GAO recommended that the Army require unit status reports to include UAS pilot readiness information. In March 2016, officials stated that the Army had taken steps to implement the recommendation, but its efforts are ongoing and thus it is too early to know their impact. Also, the Army had waived course prerequisites for about 40 percent of the UAS pilots attending a course to become instructor pilots from the beginning of fiscal year 2013 through February 2015. As a result, Army UAS pilots may not have been receiving the highest caliber of training to prepare them for UAS missions. GAO recommended in May 2015 that the Army mitigate risks posed by waiving prerequisites for less experienced UAS pilots, and in March 2016, Army officials stated that they have addressed the underlying causes that led it to waive the prerequisites, but they did not provide information for GAO to be able to determine whether they were continuing to waive these prerequisites.

Chairman Cotton, Ranking Member Manchin, and Members of the Subcommittee:

Thank you for the opportunity to be here today to discuss some of the unmanned aerial systems (UAS) pilot personnel challenges that the Department of Defense (DOD) faces. In recent years, the size, sophistication, and cost of DOD's UAS[1] portfolio has grown considerably, as has the demand for trained UAS pilots.[2] Each of the services flies various types of UAS. The Air Force flies the MQ-1 (Predator), the MQ-9 (Reaper), and the RQ-4 (Global Hawk) while the Army flies the RQ-7 (Shadow), the MQ-5 (Hunter) and the MQ-1C (Gray Eagle).

We found in our prior work that in recent years, the Air Force has not provided a sufficient number of UAS pilots to meet requirements due to several factors including most notably the increase in demand for intelligence, surveillance, and reconnaissance.[3] As a result, the UAS workload has been performed by fewer pilots working more hours to accomplish the Air Force mission. In additional in our prior work, we found that the Army has faced challenges ensuring that its pilots in UAS units that are not deployed conduct unit training to prepare them to perform their missions.[4] In April 2014 and May 2015, we reported on these other issues and made ten recommendations to DOD to improve the Air Force's management of UAS pilots, address Army UAS pilot training challenges, and enhance DOD coordination of UAS pilot training.[5]

I will focus my remarks today on DOD's progress in (1) taking actions to strengthen the management of Air Force UAS pilots, (2) addressing challenges the Army faces to ensure that its UAS pilots complete their

[1]DOD defines an unmanned aerial system (UAS) as a system whose components include the necessary equipment, networks, and personnel to control an unmanned aircraft—that is, an aircraft that does not carry a human operator and is capable of flight under remote control or autonomous programming.

[2]DOD, *Unmanned Systems Integrated Roadmap* FY2013-2038.

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

[4]GAO, *Unmanned Aerial Systems: Actions Needed to Improve DOD Pilot Training*, GAO-15-461 (Washington, D.C.: May 14, 2015).

[5]GAO-15-461 and GAO-14-316.

required training and receive high-quality training, and (3) coordinating the training of UAS pilots within DOD.

My testimony is primarily based on reports we issued on UAS personnel issues in May 2015 and April 2014.[6] For those reports, we reviewed service guidance on training UAS pilots and other relevant documents, examined nongeneralizeable training records of Air Force UAS units, conducted nongeneralizeable focus groups at 6 installations with active duty UAS pilots from a range of ranks, and interviewed DOD and military services officials. We also followed up with OSD, Air Force and Army officials to determine what actions they had taken in response to the recommendations we have made. All work on which this testimony is based was performed 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.

Air Force Has Made Efforts to Manage UAS Pilots But Further Actions are Needed

The Air Force has made efforts to manage its UAS pilots but has not fully addressed issues related to: identifying personnel requirements, recruiting and retention difficulties, the potential use of DOD civilians as pilots, pilots completing their required training, moving pilots through the training pipeline, and analyzing pilot promotion rates.

Air Force Has Not Accurately Identified the Number of UAS Pilots Required to Accomplish Its Mission

We found in April 2014 that the Air Force had not accurately identified optimum personnel requirements, or the crew ratio, for the number of UAS pilots it requires. As a result, Air Force UAS units may be operating at personnel levels that are too low, which may diminish the combat capability and flight safety of these units. The Air Force conducted a study in 2008 to determine the appropriate crew ratio for MQ-1 Predator squadrons but did not account for all of the flying and administrative tasks required of those squadrons due to the study's reporting timeframes. Based on the study, the Air Force concluded that the crew ratio for MQ-1

[6]GAO-15-461 and GAO-14-316.

Predator squadrons should be 10:1, which calls for 10 UAS pilots to support one near-continuous 24-hour flight presence of an Air Force UAS over a particular geographic location. Headquarters Air Force officials stated that, because of the omitted tasks, the study's recommended 10:1 crew ratio probably did not provide enough pilots to perform the work in an MQ-1 squadron. In addition, some UAS unit commanders and UAS pilots in some of the 10 focus groups we conducted at three Air Force bases said that the 10:1 crew ratio was too low.[7] High-performing organizations use complete and current data to inform their strategic human capital planning and remain open to reevaluating workforce planning efforts. Consequently, we recommended that the Air Force update crew ratios for UAS units to help ensure that the Air Force establishes a more-accurate understanding of the required number of UAS pilots in its units, and the Air Force concurred with our recommendation.

The Air Force has taken some actions in response to our recommendation, but Air Force officials told us that as of March 2016, the Air Force has not updated its UAS unit crew ratio. In our May 2015 report, we found that the Air Force had a three-phase personnel requirements study underway that was designed to update the UAS unit crew ratio. Air Force officials stated that the preliminary results of the study pointed to updating the UAS unit crew ratio and increasing the required number of pilots in UAS units. In May 2015, the officials also stated that they expected to update the UAS unit crew ratio later in 2015 but has not yet done so. Without an updated crew ratio, the Air Force lacks information needed to accurately identify the number of Air Force UAS pilots it requires and may need additional pilots.

As we also found in April 2014, Air Force documentation showed that crew ratios in UAS units had not met the 10:1 crew ratio identified in the 2008 study and instead fluctuated between 7:1 and 8.5:1, indicating that between 7 and fewer than 9 UAS pilots were used to sustain 24 hours of Predator operations rather than the 10 pilots recommended by the study. We found that the Air Force operated at these levels in order to provide a higher number of CAPs to meet the requests made by combatant

[7]We conducted 10 focus group meetings with active-duty RPA pilots during site visits to Beale, Cannon, and Creech Air Force Bases. We decided to visit these three bases because more RPA pilots are stationed at these bases than other Air Force bases. We use the term "some," as in "pilots in some focus groups," to report topics that were discussed by UAS pilots in two to four of our focus groups.

commanders. An Air Force instruction states that a crew ratio establishes the number of personnel required to support a unit mission and that if a ratio is too low, combat capability is diminished and flight safety suffers.[8] We recommended at that time that the Air Force establish a minimum crew ratio in Air Force policy below which UAS units cannot operate without unacceptable levels of risk to mission accomplishment and safety. The Air Force concurred with our recommendation and in comments on our report the Air Force stated that it anticipated that it would implement our recommendation by February 2015.

We reported in May 2015 that the three-phase personnel requirements study would also address the recommendation to establish a minimum crew ratio, but according to Air Force officials that study has not been finalized. In February 2016, the Air Force Deputy Chief of Staff of Operations directed that the Air Force use the 10:1 crew ratio as the minimum. However Air Force officials stated that due to personnel shortages, that ratio has not been enforced. As of February 2016, UAS units had been operating at a 9.4:1 crew ratio, meaning that between 9 and 10 UAS pilots were used to sustain 24 hours of Predator operations rather than the 10 pilots recommended by the study. Without a minimum crew ratio established in Air Force policy, the Air Force lacks information needed to determine when UAS units are operating at crew ratio levels that expose the Air Force to unacceptable levels of risk to accomplishing its mission and ensuring safety. In addition, UAS pilots may continue to experience a high pace of operations that limits their time for training and impacts their quality of life.

The Air Force Has Taken Steps to Recruit More UAS Pilots, but May Face Retention Challenges and Continues to Rely on Pilots Trained on Manned Aircraft to Meet Requirements

We found in April 2014 that the Air Force faced challenges recruiting UAS pilots and had not achieved its recruiting goals for UAS pilots in fiscal years 2012 and 2013. Air Force officials cited a number of reasons for missing the targets, including that potential UAS pilot recruits had a limited understanding of the UAS mission because the Air Force lacked recruiting officials with UAS experience. High-performing organizations tailor their strategies to the specific needs and challenges of the workforce to recruit high-quality personnel with critical skills, but the Air Force had not developed a strategy to address recruiting and retention of

[8]Air Force Instruction 65-503, *Authorized Aircrew Composition-Active Forces*, table A36-1 (Feb. 1, 2012).

UAS pilots, including increasing the appeal of the UAS pilot career to potential recruits. As a result, the Air Force risked personnel shortages and continued reliance on manned-aircraft pilots to fill its personnel requirements. We recommended that the Air Force develop such a tailored strategy to recruiting and retaining UAS pilots to help ensure that the Air Force can meet and retain required staffing levels, and the Air Force concurred.

In 2015, Air Force senior leadership and headquarters officials stated that the Air Force was in the process of developing strategies to recruit UAS pilots. The Air Force has taken a number of actions that officials say have helped improve UAS pilot recruiting. For example, Air Force officials stated that Headquarters Air Force has efforts underway to educate potential recruits at the commissioning sources such as the Air Force Academy on the UAS mission. Officials told us that the Air Force is providing cadets information on the UAS pilot career and it is assigning UAS pilots to the Academy so that they can share their on-the-job experiences with cadets who may be interested in becoming a UAS pilot In addition, the Air Force began requiring cadets to volunteer to serve in any of the four aviation-related careers rather than applying for one specific career. This process allows the Air Force to assign cadets to any of the four careers based on Air Force needs, among other factors. Air Force officials stated that the Air Force has also opened up eligibility for becoming a UAS pilot by removing age requirements and granting waivers for certain medical requirements.

In April 2014 we also found that the Air Force may face challenges retaining UAS pilots. Pilots in 7 of the 10 focus groups we conducted at three Air Force bases indicated that retention of UAS pilots is or will be a challenge and UAS unit commanders in one location we visited and other Air Force officials stated that they were concerned with future retention rates of UAS pilots. As mentioned above, we recommended that the Air Force develop a tailored strategy that addresses both recruiting and retention of UAS pilots and the Air Force concurred.

To retain pilots, officials stated that the Air Force pays UAS pilots a monthly assignment incentive pay which is equivalent to the amount that manned pilots receive in aviation pay. Also, the National Defense Authorization Act for Fiscal Year 2016 granted the Air Force the authority to increase the annual amount that it pays UAS pilots in a retention bonus from $25,000 to $35,000. A Headquarters Air Force official told us in January 2016 that the Air Force has not used this authority to pay UAS pilots the increased amount of this retention bonus for two reasons. First,

OSD has not yet issued related policy that the act required be issued before the Air Force could begin paying this increased amount. Second, the Air Force does not have enough data to determine what the retention patterns of this population will be because most of the pilots who specialize in flying UAS have not reached the end of their six-year service commitment. The official stated that the Air Force would like to determine if retention of this population is a concern before exercising the authority to offer these pilots the increased retention bonus amount.

Further, the Chief of Staff of the Air Force testified that the Air Force was not using the increased amount of the retention bonus. Specifically, he stated that the Air Force did not use that increased bonus for UAS pilots because the current amount was commensurate with that of other critically manned pilot categories. He further stated that the Air Force has other pilot categories that are even in more crisis than UAS at this point in time. We will be exploring further with the Air Force their plan to use this bonus and UAS pilot retention rates. The Air Force is pursuing initiatives to address shortages in the MQ-1 and MQ-9 pilot community that Air Force officials say will have a positive impact on retention. For example, the Air Force is supplementing its UAS pilot population with the Air Force Reserve and contractor support.

The Air Force has taken positive steps toward improving recruiting and, according to Air Force officials, has met or nearly met its UAS pilot recruiting goals for fiscal years 2014 and 2015, which shows progress toward resolving the recruiting challenges we found in 2014. At the same time, issues related to recruiting UAS pilots may warrant the Air Force's attention. In particular, the recruiting goals themselves may not be appropriate because, as previously discussed, the crew ratio has not yet been updated and the crew ratio is used to determine the total number of UAS pilots the Air Force requires. In addition, in April 2014, we also found that 42 percent of Air Force pilots flying UAS were manned-aircraft pilots and manned-aircraft pilot training graduates. Both of those groups are temporary UAS pilots who serve only one assignment in a UAS squadron. Air Force officials stated that as of March 2016, those groups represented around one-third of Air Force UAS pilots. They also stated they anticipate they will not need to use any manned-aircraft pilot training graduates in fiscal year 2016 based on the number new UAS pilots that the Air Force anticipates will join the Air Force in fiscal year 2016. However, if the Air Force updates the crew ratio and finds it needs to increase the number of UAS pilots it requires, the Air Force may need to continue relying on manned aircraft pilots, indicating the continued importance of a strategic

approach to recruiting and retention that is tailored to the needs of the UAS pilot workforce.

The Air Force Is Planning to Use Enlisted Personnel to Operate the Global Hawk but has not Evaluated the Possible Use of DOD Civilians

In April 2014, we found that the Air Force had not evaluated whether using alternative personnel populations such as enlisted or civilian personnel as UAS pilots is a viable option to help it meet and sustain required UAS pilot staffing levels. Headquarters Air Force officials had stated that they had, at times, considered the use of enlisted or civilian personnel but had not initiated formal efforts to evaluate the potential use of alternative personnel populations as UAS pilots. We recommended that the Air Force conduct such an evaluation to identify whether such alternative populations could help the Air Force meet and sustain required UAS pilots staffing levels. The Air Force partially concurred with our recommendation, stating that the Air Force had considered assigning enlisted personnel as UAS pilots but had decided that the responsibilities of piloting a UAS were commensurate with the rank of officers.

Subsequently, the Air Force has made progress toward implementing our recommendation. Even though the Air Force commented on our recommendation that the responsibilities of piloting a UAS were commensurate with the rank of officers, the Chief of Staff of the Air Force directed Headquarters Air Force staff to evaluate the potential of using enlisted personnel as UAS pilots in fall 2014. Further, the Air Force announced in December 2015 that it would integrate enlisted personnel into flying operations for the RQ-4 Global Hawk UAS. In December 2015, the Secretary of the Air Force and Chief of Staff of the Air Force stated that the goal of the initiative is to provide an additional avenue for capability growth and directed development of an implementation plan to use enlisted personnel to operate the Global Hawk by May of 2016. However, as of March 2016, Air Force officials stated that the Air Force has not formally evaluated using DOD civilian personnel as UAS pilots, as we recommended. Without also evaluating DOD civilian personnel, the Air Force may lack valuable information on whether additional options exist for meeting personnel requirements.

Air Force UAS Pilots Do Not Complete the Majority of Their Continuation Training

In April 2014, we found that the high pace of operations limited the time the UAS pilot workforce could put toward training and development. In addition, in May 2015, we found that Air Force UAS pilots do not complete the majority of their continuation training because they spend most of their time conducting operational missions due to shortages of UAS pilots and high workloads. Continuation training includes all training that takes place once a servicemember reaches their operational unit and

finishes the training required to be considered qualified to perform the unit's mission. A core characteristic of a strategic training framework is that agency leaders and managers consistently demonstrate that they support and value continuous learning. We found that a nongeneralizable sample of training records for seven Air Force UAS units showed that, on average, 35 percent of the pilots in these units completed the continuation training for all of their seven required missions in fiscal year 2014. In March 2016, Air Force officials stated that UAS units make efforts to dedicate time to continuation training but the majority of their time is still devoted to combat missions based on personnel shortages and high demand. However, as we noted in May 2015, fully implementing all four recommendations we made in our April 2014 report pertaining to management of Air Force UAS pilots should better position the Air Force to address the UAS pilot shortages that contribute to training challenges.

The Air Force Faces Challenges Moving UAS Pilots Through the Training Pipeline

In April 2014 we found that the Air Force had reduced the capacity of its training units by moving instructor pilots to operational units to react to increasing demand for UAS capabilities. A core characteristic of a strategic training framework is that agencies should provide appropriate resources for its training programs. However, In May 2015, we found that the Air Force had staffed its UAS training squadrons at Holloman Air Force Base at 63 percent of their planned staffing levels due to shortages of UAS pilots across the Air Force, which Air Force officials stated in turn impacted the Air Force's ability to produce new pilots. We also reported actions the Air Force was taking to increase the number of instructor pilots, including studying the personnel requirements for the formal training unit. Air Force officials stated that as of February 2016, the Air Force had filled 84 percent of its instructor pilot positions at Holloman. These officials said that there is still a need to increase the number of instructor pilots, and the Air Force goal is to fill 100 percent of the instructor pilot slots by fiscal year 2017. Fully implementing our recommendations pertaining to management of UAS pilots should better position the Air Force to address the need to increase the number of instructor pilots.

The Air Force Monitors UAS Pilot Promotion Rates but Has Not Analyzed Factors Related to Those Rates

In April 2014, we found that the Air Force monitors the promotion rates of UAS pilots but had not analyzed factors that may relate to their low promotions rates. The Air Force had found that UAS pilots were promoted below the average rate for active-duty line officers on 20 of 24 officer promotion boards between 2006 and 2012 and 2013, depending on rank. We also found that UAS pilots were promoted at the lowest rate of any career field on 9 of the 24 boards. Statistical principles call for

researchers to account for potential key factors in analysis because when they omit key factors, the relationships between other factors may not be accurately estimated. The Air Force analyzed promotions across a group of officers –or the Line of the Air Force—including UAS pilots, and found factors that related to promotions in general. However, the Air Force had not analyzed the factors related to UAS pilots' promotions specifically and, as a result, it did not have the information to determine what factors may affect their promotions. We recommended that the Air Force include the career field effect of being a UAS pilot into its analysis to determine whether and how being a UAS pilot is related to promotions and determine whether the factors identified in the analysis of Line of the Air Force officers are also related to UAS pilot promotions.

The Air Force partially concurred with our recommendation, stating that because the UAS career field is a subsection of the Line of the Air Force, the factors identified in analysis of the Line of the Air Force are directly related to UAS pilot promotions, which we acknowledged in our report. As of January 2016, the Air Force had not taken any steps to implement our recommendation and when we sought additional information in March 2016, the Air Force did not respond in time for this statement. Without including the career field effect in its analysis, the Air Force may not be targeting actions it is taking to raise UAS pilots promotion rates at the appropriate factors, and information it has reported to Congress may not be accurate.

Army Has Not Fully Addressed Challenges Related to UAS Pilots Completing Required Training and the Use of Less Experienced Instructors

The Army has not fully addressed challenges related to UAS pilots completing their required training and its use of less experienced instructors, which could affect training quality.

Army UAS Pilots in Shadow Units that are Not Deployed Are Not Completing Continuation Training

In May 2015, we found that a 2015 Army review showed that pilots in most of the Army's Shadow units did not complete training in their units in fiscal year 2014.[9] We previously developed a set of core characteristics for assessing strategic training programs in the federal government.[10] One of these characteristics calls for agency leaders to demonstrate that they value continuous learning. [11] In January 2015, the Chief of Staff of the Army directed the Army Training and Doctrine Command to evaluate if unit training was a factor that caused UAS mishaps in combat. The Army reviewed this issue from January 2015 through March 2015 and found that UAS pilots in 61 of the 65 RQ-7B Shadow units that were not deployed in fiscal year 2014 had flown an annual unit average of 150 hours of training,[12] which is about 200 hours less than minimum amount of training flight hours that an Army unit is required to fly according to the review. In addition, the review included recommendations to increase emphasis on training in UAS units including that the Army should (1) issue guidance to unit commanders on UAS training; (2) ensure that UAS warrant officers are qualified on their UAS; (3) Increase the amount of home station training for UAS units; and (4) establish a system to report UAS training readiness on unit status reports.

We corroborated the Army's findings in focus groups discussions[13] with Army UAS pilots and in responses to a questionnaire that UAS unit commanders

[9]Army Shadow units operate the RQ-7 Shadow UAS.

[10]GAO, *A Guide for Assessing Strategic Training and Development Efforts in the Federal Government*, GAO-04-546G (Washington, D.C.: Mar. 2004). To develop these characteristics, we consulted government officials and experts in the private sector, academia, and nonprofit organizations; examined laws and regulations related to training and development in the federal government; and reviewed literature on training and development issues, including previous GAO products on a range of human capital topics.

[11]GAO-04-546G.

[12]This measure shows an average of the total amount of training time that all pilots in each unit flew in fiscal year 2014.

[13]We conducted 8 focus groups with Army UAS pilots at Ft. Huachuca, AZ and Ft. Hood, TX. We selected these locations on the basis of several factors including the type and size of UAS flown in the unit; missions of the unit; whether or not the unit is deployed (we did not meet with units who were deployed); number of UAS pilots in the unit; the major command of the unit; and location of the unit. We conducted focus groups with active-duty UAS pilots at these locations to gain their perspectives on the Army's UAS training efforts. To select specific UAS pilots to participate in our focus groups, we worked with officials at each of the instillations to develop a diverse group of active-duty UAS pilots. To obtain a variety of perspectives, we selected UAS pilots with varying amounts of experience flying UASs and additional duties in their units. The opinions of UAS pilots we obtained during our focus groups are not generalizable to the populations of all UAS pilots in the Army.

provided. Specifically, we found that pilots in all eight of the focus groups we conducted with Army UAS pilots stated that they cannot complete training in their units. For example, a pilot in one of 8 focus groups stated that during his 3 years as a UAS pilot, he had been regularly tasked to complete non-training-related activities, and as a result he completed a total of 36 training flight hours even though the requirement is that he should have completed 72 flight hours during those three years. Further, Army UAS pilots in each of the 8 focus groups we conducted stated that they had difficulty completing UAS pilot training in units because they spend a significant amount of time performing additional duties such as lawn care, janitorial services, and guard duty. Additionally, five of the six Army UAS units that responded to a questionnaire we administered indicated that their units faced challenges completing training in their units.

At the time, we did not make any recommendations on this issue. We noted that while the Army review and our analysis showed that most Army UAS pilots were not completing training in their units, the Army's training shortfalls might be addressed by the high-level interest expressed by the Chief of Staff of the Army and the recommendations in the Training and Doctrine Command review, if implemented. We asked the Army to provide information to update our May 2015 report to show (1) the amount of unit training that UAS pilots completed in fiscal year 2015, and (2) actions the Army had taken in response to its internal recommendations to increase emphasis on unit training. Finally, the Army did not respond to our request to provide updated information on these topics for this statement.

Army Does Not Have Visibility over the Amount of Training that Pilots in Some UAS Units Have Completed

In May 2015, we also found that the Army does not have visibility over the amount of training that pilots in some Army UAS units have completed. Another core characteristic of a strategic training framework highlights the importance of quality data regarding training.[14] However, we found that Army does not have access to data that would allow it to measure the amount of training that UAS pilots have completed in Army UAS units. Army Forces Command officials stated that they need information about the readiness level of pilots in UAS units to determine if a unit is ready to deploy and perform its mission. These officials stated that they review Army unit status reports to determine if a unit is prepared to deploy. However,

[14] GAO-04-546G.

officials from Army Headquarters, Army Forces Command and the Army Aviation Center of Excellence both stated that these reports do not provide any information on the readiness levels of the UAS pilots in UAS units because the reports are not required to include this information. Officials at Forces Command stated that, using these reports, they have designated units as available for deployment and later learned that a significant portion of the pilots in those units had not completed their readiness level training. Without requiring information on the readiness level of pilots in UAS units as part of unit status reports, Army Forces Command will continue to lack visibility over the amount of training that UAS pilots have completed in units. To provide greater visibility over the extent to which Army UAS units have completed required training to leaders responsible for deployment decisions, we recommended that the Army require unit status reports to include information on the readiness levels of UAS pilots in UAS units and the Army concurred.

Since we issued our report in May 2015, Army Headquarters officials stated that the Army had drafted an update to Department of the Army Pamphlet 220-1 that would require UAS units to report the readiness levels of the UAS pilots in UAS units.[15] In addition, these officials stated that the Army was working on updating the unit status reporting software to enable units to comply with the planned update to the Army pamphlet. While the steps that Army has taken to date should address our recommendation, its efforts are ongoing and thus it is too early to know their impact.

The Army Has Taken Action to Increase the Number of Instructors, but Its Use of Less Experienced Instructors Could Affect the Quality of UAS Pilot Training

In May 2015, we found that the Army had taken actions to increase the number of UAS instructors, but it had not fully addressed the risks associated with using less experienced instructors. In order to increase the number of its instructors in response to an increase in the number of UAS units, the Army waived course prerequisites for about 40 percent of the UAS pilots attending the course to become instructor pilots from the beginning of fiscal year 2013 through February 2015.These prerequisites—such as a minimum number of flight hours— are important because they help ensure that UAS pilots volunteering to become instructors to help ensure that instructors are fully trained and ready to instruct UAS pilots.

[15]Army Pamphlet 220-1, *Defense Readiness Reporting System-Army Procedures*, (November 16, 2011).

In May 2015, we found that the Army had taken steps to mitigate the risks of using less proficient UAS instructors. For example, in fiscal year 2015, the Army stopped waiving course prerequisites related to proficiency, according to Army Aviation Center of Excellence officials. However, the Army could continue to waive prerequisites related to experience. As a result, we found that Army UAS pilots may not have been receiving the highest caliber of training needed to prepare them to successfully perform UAS missions. To help ensure that Army UAS pilots receive the highest caliber of training, we recommended, in May 2015, that the Army take additional steps to mitigate potential risks posed by waiving course prerequisites for less experienced UAS pilots attending the course to become instructors and the Army concurred.

In February 2016, Army Headquarters officials stated that the Army has taken additional steps to mitigate potential risks posed by waiving course prerequisites for less experienced UAS pilots attending the course to become instructors. However, the Army did not respond to requests we made in March 2016 for it to explain these additional steps; nor did the Army respond to requests we made for it to provide updated statistics to determine if the Army was continuing to waive these prerequisites. In addition, an Army official from Training and Doctrine Command stated that the Army had not provided additional training or preparation for instructors who previously received a waiver of one of the course prerequisites to attend the instructor course as we had recommended.

DOD is Coordinating on Some Aspects of UAS Pilot Training But Still Lacks a Department-Wide Strategy

Some coordination is occurring among the services with respect to UAS pilot training but DOD has not yet developed a department-wide UAS training strategy. In May 2015, we found that the actions that the services had taken were either partially consistent or inconsistent with the key practices to enhance and sustain agency coordination.[16] We previously reported that agencies face a range of barriers when they attempt to collaborate with other agencies. To help agencies overcome these barriers, we developed a set of key practices that can help enhance and sustain federal agency collaboration.[17] According to these key practices, federal agencies can enhance and sustain their coordination if they take a number of actions including the following.[18]

- Agencies should identify the human, information technology, physical, and financial resources needed to initiate or sustain their coordinated effort. In May 2015, we found that DOD actions were partially consistent with this principle. For instance, the Air Force and the Army provide resources to train all Marine Corps UAS pilots. However, as we found in May 2015, both the Army and the Air Force are working on addressing UAS personnel shortages and such shortages may negatively affect their ability to continue to train Marine Corps UAS pilots.
- Agencies should agree on their roles and responsibilities, including how the coordinated effort will be led. In May 2015, we found the Office of the Deputy Assistant Secretary of Defense (Readiness) and the services have not agreed on roles or responsibilities for any of the services for coordinating on UAS pilot training. The Office of the

[16]GAO-15-461

[17]We reported these key practices in *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005). For our 2005 report, we derived these practices by reviewing academic literature and prior GAO and Congressional Research Service reports; and interviewing experts in coordination, collaboration, partnerships, and networks from the National Academy of Public Administration, the IBM Center for The Business of Government, and the University of California, Berkeley.

[18]While these practices address interagency collaboration, we believe these practices apply to intra-agency coordination in DOD because multiple departments within DOD are responsible for UAS pilot training programs. Further, we reviewed these practices with officials from the Office of the Assistant Secretary of Defense for Readiness and these officials agreed that the practices applied in the context of our review. In addition, we confirmed these practices and reported on mechanisms for implementing collaborative efforts in Managing For Results: Key Considerations for Implementing Interagency Collaborative Mechanisms, GAO-12-1022 (Washington, D.C.: Sept. 27, 2012).

Under Secretary of Defense for Acquisitions, Technology, and Logistics established a UAS Task Force in 2007, and its charter states that its mission is to coordinate critical DOD UAS issues. However, a task force official stated that the task force does not play a role in coordinating UAS pilot training among the services.

- Agencies should define a clear and compelling rationale for coordination. In March 2010, we found that DOD had begun to address UAS training challenges, but had not developed a strategy to prioritize and synchronize these efforts. We recommended that DOD establish a DOD-wide UAS training strategy to resolve challenges that affect the ability of the Air Force and the Army to train personnel for UAS operations and DOD concurred with that recommendation.[19] The Office of the Deputy Assistant Secretary of Defense (Readiness) tasked the RAND Corporation to draft a DOD-wide UAS training strategy and provided RAND with guidelines about the content and purpose of the strategy.[20] However, these guidelines did not discuss if or how the services should coordinate on UAS pilot training. In September 2014, RAND provided a draft of a UAS training strategy to the Office of the Deputy Assistant Secretary of Defense (Readiness), but the draft did not define a rationale for the services to coordinate on training UAS pilots nor did it more generally discuss service coordination on training UAS pilots.

In our May 2015 report we noted that the Acting Deputy Assistant Secretary of Defense (Readiness) had stated, in January 2015, that the services should coordinate their efforts to train UAS pilots and that the services may have valuable training lessons to share with one another because the services fly similar UAS. He cited similarities between the Air Force's Predator and the Army's Gray Eagle and between the Air Force's Global Hawk and the Navy's Triton. He stated that if the services coordinated on training their UAS pilots the department as a whole may be able to train its UAS pilots more effectively and efficiently. However, as we found in May 2015, without a DOD-wide UAS training strategy that

[19]GAO, *Unmanned Aircraft Systems: Comprehensive Planning and a Results-Oriented Training Strategy Are Needed to Support Growing Inventories*, GAO-10-331 (Washington, D.C.: Mar. 26, 2010).

[20]In 2010, we found that DOD had commenced initiatives to address training challenges, but had not developed a results-oriented strategy to prioritize and synchronize these efforts. We recommended that DOD establish a UAS training strategy to comprehensively resolve challenges that affect the ability of the Air Force and the Army to train personnel for UAS operations and DOD concurred with our recommendation. See Unmanned Aircraft Systems: Comprehensive Planning and a Results-Oriented Training Strategy Are Needed to Support Growing Inventories, GAO-10-331 (Washington, D.C.: Mar. 26, 2010).

addresses if and how the services should coordinate with one another on training UAS pilots, the services may miss opportunities to improve the effectiveness and efficiency of this training and may waste scarce funds on training UAS pilots. We therefore recommended that the Office of the Under Secretary of Defense for Personnel and Readiness address how the services should coordinate with one another in the DOD-wide UAS training strategy the office was drafting at the time we issued our report, and DOD concurred with this recommendation.

In March 2016, the Director of Force Training in the Office of the Assistant Secretary of Defense (Readiness) stated that DOD had not yet published the DOD-wide UAS training strategy but the strategy was in the final drafting phase. He stated that his office held a summit in October 2015 with each of the services and during this summit representatives from each of the services discussed the draft strategy and how to incorporate our recommendation into the strategy. He stated that his office was collecting the services' comments on the draft strategy and would provide them to RAND and that RAND is currently revising the strategy. The Director stated that the current version of the strategy addresses our recommendation and provides detail on how the services could coordinate with one another during sustainment and mission readiness training. However, as of March 2016, the Office of the Assistant Secretary of Defense (Readiness) has not yet issued the DOD-wide UAS training strategy.

In summary, the Air Force and the Army have taken actions to implement the recommendations that we made to address some of the UAS workforce challenges we identified in 2014 and 2015. However, none of the recommendations that we have discussed today have been fully implemented. As you know, in June 2014 the Senate Armed Services Committee directed the Air Force to implement three of our recommendations—which address the UAS unit crew ratio, recruiting, and retention—that we discussed today. In addition, the Committee Chair and Ranking Member have urged the Secretary of Defense to focus senior leaders in the department on the UAS pilot training shortfalls in the Army and Air Force that we also discussed today. Fully implementing our recommendations would set the Air Force on a positive course toward helping ensure the high-demand UAS pilot workforce has sufficient numbers and is well trained. Similarly, as we recommended, greater visibility over the extent to which Army UAS units have completed required training and additional training for instructors who previously received a waiver of one of the course prerequisites would help ensure a highly skilled future Army UAS workforce. However, without addressing if

and how the services can enhance their coordination efforts on training UAS pilots in DOD's forthcoming training strategy, the services may not be able to achieve additional benefits to the efficiency and effectiveness of UAS pilot training across the department.

Chairman Cotton, Ranking Member Manchin, and Members of the Subcommittee, this concludes my prepared testimony. I look forward to answering any questions.

GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Brenda S. Farrell, Director, Defense Capabilities and Management 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 statement. GAO staff who made key contributions to this testimony are Lori Atkinson, (Assistant Director), James P. Klein, Kelly Liptan, Felicia Lopez, Mike Silver, and Erik Wilkins-McKee.