Enlisted RPA Pilots: The Path to Air Mission Command

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Introduction

Much has been written about whether the USAF should utilize enlisted Airmen as pilots within the remotely piloted aircraft (RPA) enterprise. What has been missing are ideas for how it might be accomplished if this concept is fully implemented. As such, the focus of this article is on *how* the Air Force should utilize enlisted RPA pilots, not whether this *should* be accomplished. A focus on the role of the officer compared to the enlisted Airmen is necessary before proposing how enlisted pilots may be incorporated into the current RPA systems. Next, a hypothetical future RPA operational model will be assumed to develop an end-state capability to pursue. Finally, a model for employing enlisted RPA pilots within the current MQ-9 community will be examined, with the goal of developing to the future capability—RPA air mission command.

Roles of Different Airmen

The fundamental difference between an officer and enlisted Airman must be identified with roles defined before making a major change within the USAF pilot community. Leaders must develop an appropriate construct within current and future RPA systems and avoid the trap of responding to demand without proper study. One could easily devote an entire work to this subject when comparing the military roles of the officer and enlisted warrior across different job types and services. Delineating the roles of the two respected offices for this discussion will be accomplished by making a simplified assertion: the commissioned officer must always retain ultimate *authority and accountability*.

With a commission as an officer in the USAF, one bears the legal authority to decide and act according to orders provided through the command chain. Those decisions involve risking life and treasure to complete a mission. Although enlisted Airmen can be delegated authority and are often trusted with immense responsibility, it is ultimately the commissioned officer who should be held accountable. Specifically, within aviation, decisions are made that involve elements of command on a daily basis. To allow enlisted Airmen to pilot RPAs in the current organizational construct means placing the burden of command authority on the shoulders of these men and women.

Georgetown University professor Dr. David Blair has argued against the idea of using enlisted Airmen to pilot RPAs as a matter of command authority. In a 2015 article, Blair noted that employing enlisted pilots alongside commissioned officers would be asking our talented enlisted men and women to do the same work, but without the same pay, authority, and honor granted to a commissioned officer. Additionally, situations involving command decision making may be problematic, as the lieutenant piloting one RPA may be able to make a decision that must be *made for* the technical sergeant flying an RPA in the adjacent control station.[1] Blair's perspective on the topic is not limited to his academic acumen as a professor; he is also an MQ-1 and MQ-9 pilot who has held instructor and evaluator pilot ratings. Blair's insight sheds light on an important concept that remains constant if any model for enlisted aviators is to be employed within the RPA enterprise; commander authority must shape mission activities, even when subordinates are capable of near-independent action.

A look at joint doctrine informs this perspective. Regarding the idea of mission command, JP 3-0 *Joint Operations*, states, "Commanders delegate decisions to subordinates whenever possible, which minimizes detailed control and empowers subordinates' initiatives to make decisions based on the commander's guidance rather than constant communication. Subordinates' understanding of the commander's intent at all levels of command is essential to mission command."[2] Thus when incorporating this doctrinal idea into a practical framework for RPA flight operations, it holds that enlisted Airmen may perform *highly skilled* roles, but commissioned officers must remain at the center for exerting *command auth*ority and *accepting accountability* for mission results.

Assuming an End State

Identifying roles and authorities an enlisted Airman may or may not wield is not enough to plunge into the task of developing an enlisted RPA pilot corps. Adding enlisted pilots to the RPA enterprise would constitute a major paradigm shift in both institutional and cultural norms. Developing a construct for the integration of these Airmen into the current system architecture without considering how immerging technology may change aviation is a recipe for waste and potential mission failure. Decision makers must understand how RPAs will evolve before forcing an organization as large as the Air Force to undertake significant institutional change.

This evolution will be a combination of technological advancements and concepts of operations (CONOPS), creating capacity in the near future that could completely change the structure and operational paradigm of an Air Force RPA squadron. With a reasonable end state identified, leaders can work back from the target to affect organizational change that will ensure success in the future, then intelligently determine how an enlisted Airman fits into an RPA cockpit now.

A vision of the end state that the USAF may strive for is provided by defense researcher Paul Scharre in his 2014 report, "Robotics on the Battlefield Part II—The Coming Swarm." In his report, Scharre develops an image of how robotics and autonomous systems will perform increasing roles in future combat as technology drives militaries to depend on advanced systems. He envisions large "swarms" of low-cost systems being employed with advanced algorithms, allowing for coordinated attack options.[3] To employ the systems of the future, Scharre believes it will require, ". . . moving beyond existing paradigms where humans directly control a vehicle's movements to one where human controllers supervise the mission at the command level and uninhabited systems maneuver and perform various tasks on their own. Increased automation also has the potential to speed up the pace of warfare by helping to shorten decision cycles and, in some cases, remove humans from them entirely."[4]

Of course, it is debatable how technological advancements will shape RPA operations in the USAF. Scharre's vision is by no means absolute. However, it is reasonable to assume that automation will continue to take on an increased role in military operations, and that the USAF will need to change the construct of its current RPA enterprise to best utilize emerging technology. Transitioning from a *human **in**-the-loop* construct, to one using a *human **on**-the-loop* approach is likely a path already determined by developments in automation. Simply put, this means transitioning humans away from performing the tasks associated with flying an aircraft. Instead, aviators will inject their intent into an automated system and make critical decisions, such as when to employ weapons, while autonomy within the aircraft performs much of the piloting. Advanced automation will free tremendous amounts of human cognitive capacity by performing roles that can be captured and shaped into an algorithm. Combat systems will increasingly evolve such that *machines do tasks*, allowing warriors to focus on the *exertion of will*.

In translating the task (automation)/will (human) differentiation into a usable model for discussion, figure 1 is proposed to represent a possible, and arguably desirable, construct for how advanced technology and CONOPS could shape the Air Force's fleet of MQ-9 aircraft in the future. Pending a breakthrough in the hard sciences which might completely alter the engineering of aircraft, one can assume that the MQ-9 airframes will continue to fly well into the future, or something of similar design. Moreover, advancements in aviation-related technology as experienced in the last 20 years will likely continue. Thus, the MQ-9 flying 15–20 years from now should be equipped with advanced automation, sensors, weapons, and other *information-focused* capabilities not yet matured. In the model presented here, the MQ-9 is piloted almost completely autonomously.

Each MQ-9 in the model is assumed to be capable of deploying and recovering two or three small RPAs in-flight, controlled by the automation shared between the drone and its mothership MQ-9. At the heart of this swarm of aircraft is a USAF officer. The officer is not a pilot, as the aircraft pilots themselves. Rather, the officer is a MCC who exerts the supported commander's will through an aviation capability not yet captured into our doctrine. The officer has at his or her disposal weapon system capacity in the swarm, requiring enlisted Airmen in critical support roles. These Airmen are vital to ensuring the swarm is healthy: monitoring aircraft performance and systems, maintaining secure communications, attaining airspace clearances, moving new vehicles in and out of the swarm, and a host of other tasks relating to weapons and sensor systems.

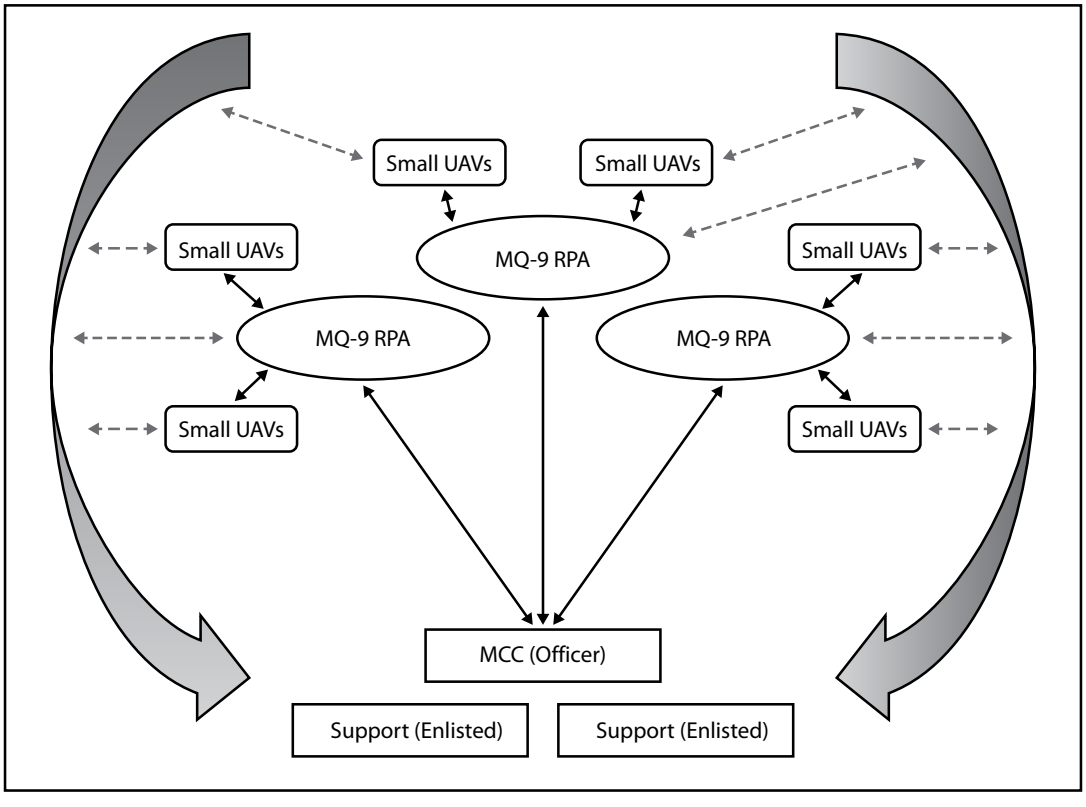

Figure 1. Air Force mission commander construct

Although the model presented is fictitious, ignoring the vision will not make the idea go away. Competing nations and commercial enterprise are developing and fielding RPAs, automation systems, and artificial intelligence (AI) at an alarming pace. The conversation among defense leaders does not involve whether the United States should invest in automation and AI; the question is how do we do it right? Technology, combined with CONOPS, will change the essence of aviation from the

legacy one-pilot, one-plane paradigm, to a future where warriors employ multiple vehicles generating resilient, flexible, and overwhelming force. To be successful, the Air Force should consider new manpower structures *now* to facilitate the ways and means of leading the airpower evolution.

Enlisted RPA Pilots as the Path

Reflecting on figure 1, the difference in the role of an officer (authority/accountability) and an enlisted Airman (skilled task execution) are easily separated. The MCC injects will into the battle, while the support Airmen assist to enable that will by working within the weapon system. However, the distinction between *skill* and *authority* is often confused when considering how one could employ enlisted Airmen to pilot the MQ-9 of today. Building a manpower construct within the RPA community that takes the enterprise forward by using enlisted Airmen as pilots should not violate the intentional distinction between the two offices. Rather, it should be viewed as an opportunity to develop an operational concept that will be necessary for the incorporation of advanced automation.

Figure 2 shows the simple relationship between a modern MQ-9 aircraft and the pilot inside a ground control station (GCS). The pilot, aided by the sensor operator (SO), manually operates the aircraft while exercising full authority for the aircraft and the mission.[5] By replacing the officer pilot with an enlisted pilot, the full weight of authority and accountability are now placed on the shoulders of the noncommissioned Airman. To avoid this position, the concept of *air mission command* within the RPA community needs to be central to any plan that puts enlisted Airmen in the pilot seat.

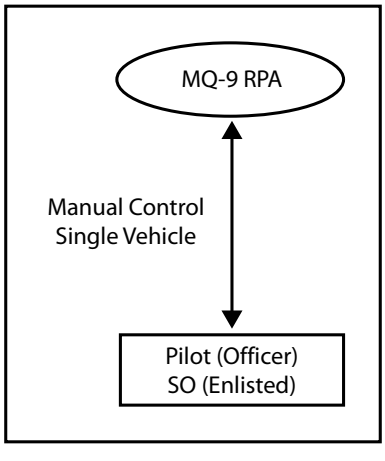

Figure 2. Current MQ-9 construct

An intentional structure must be developed that provides the necessary skills the enlisted pilot will need to fly the MQ-9. Included in the structure must be the guidance for obtaining mission intent and authority from the pilot's mission commander. A model of this relationship is provided in figure 3. This model is offered under the

following assumptions: (1) the enlisted pilots receive the same aviation training as current officer RPA pilots, (2) all RPA-rated officers will be trained as fully qualified MCCs, (3) enlisted pilots are the primary pool of pilot manpower (officers only fly enough to maintain proficiency), and (4) no hardware changes are required; this model can be implemented with only manpower and conceptual changes.[6]

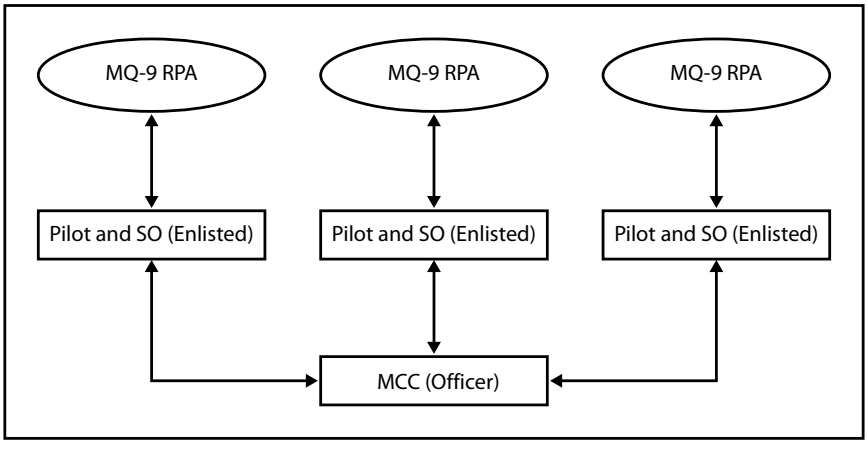

Figure 3. MQ-9 construct with enlisted pilots

In attempting to apply this model, it would likely become apparent that officers who currently pilot are not prepared to take on the role of MCC. There is no doctrine providing tactics, techniques, and procedures for mission execution. There are no Air Force instructions identifying the roles and authorities of the RPA mission commander, or limiting the authority of the enlisted pilot from, "The Pilot in Command (PIC), regardless of rank, is responsible for, and is the final authority for the operation of the aircraft."[7] Successfully implementing this construct means the Air Force must allocate resources to fully develop this concept including war gaming and flight testing.

As the concept matures, air mission command will allow for expanded capacity as new concepts and technology are incorporated into the enterprise. As an example, assume that 5–10 years after implementing of the above proposed construct across the Air Force RPA community, commercial off-the-shelf technology (COTS) has allowed for MCCs at any RPA operations center to provide command duty for any crew in the RPA enterprise, regardless of the GCS location. Consequently, mission leadership could be assigned not based on the location of the crews, but based on mission intent.

Figure 4 below illustrates this point. In the diagram, aircrew are grouped into three squadrons based on the geographic location of their assigned units: A, B, and C. However, based on mission needs, one of Squadron A's MQ-9s has been tasked to support a line of effort (LOE) that is best commanded by the MCC from Squadron B. COTS technology, doctrine, and training allow the crew in GCS A3 to be tactically gained under MCC B to maximize mission effects.

Air mission command allows for flexibility in the fleet (fig. 5). The RPA wing(s) under an intentionally developed doctrine assign MCC tasks in the most effective manner for the day. The enlisted pilot is central to allowing the officer corps the space to develop the concept, doctrine, instruction, TTPs, and hardware requirements for effective mission command.

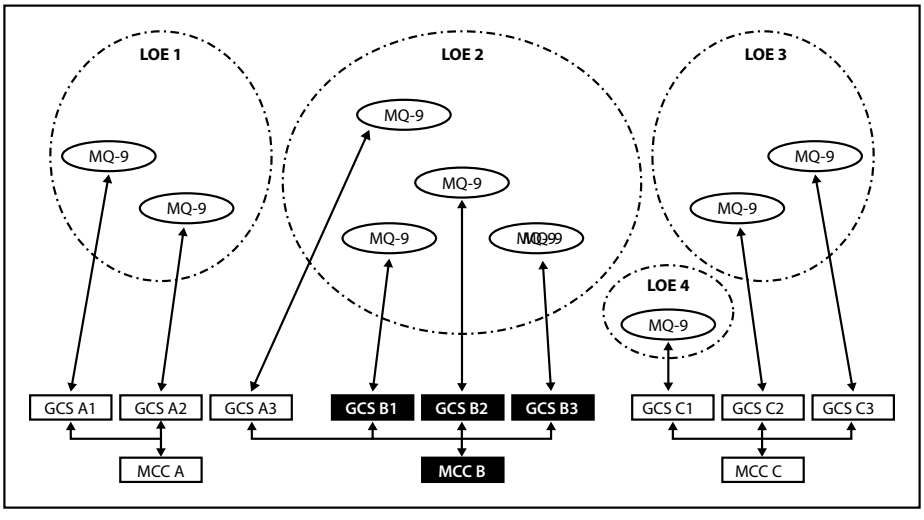

Figure 4. Enterprise-wide MQ-9 mission command

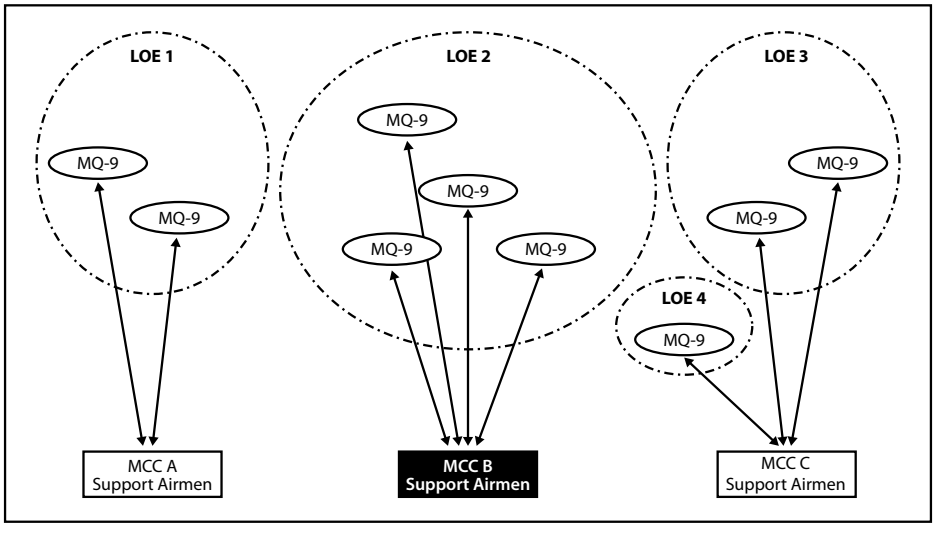

Figure 5. Automation–enabled MQ-9 mission command

Summary

As stated in the beginning, this article is not intended to argue whether the USAF *should* utilize enlisted pilots. The focus is on *how* to best utilize our Airmen to maximize the capacity of the Air Force RPA enterprise to fulfill its mission. The argument made here is threefold: (1) command authority and accountability must remain with the commissioned officer, (2) the community must make a reasonable assumption of how the enterprise will fight in the future and develop toward that end, and (3) air mission command doctrine must be developed for the current RPA system architecture to maximize capacity now and enable the future. ✪

Notes

1. David Blair, "Stripes to Stars: Enlisted Airmen Deserve to Become Officers before They Become Pilots," 27 October 2015, http://warontherocks.com/2015/10/stripes-to-stars-enlisted-airmen-deserve-to-become-officers-before-they-become-pilots/.
2. Joint Publication 3-0, *Joint Operations*, 17 January 2017, II-2, http://www.dtic.mil/doctrine/new_pubs/jp3_0.pdf.
3. Paul Scharre, *Robotics on the Battlefield Part II: The Coming Swarm* (Washington, DC: Center for a New American Security, 2014), 5–7, accessed 7 March 2016, https://www.cnas.org/publications/reports/robotics-on-the-battlefield-part-ii-the-coming-swarm.
4. Scharre, *Robotics on the Battlefield*, 6.
5. Although there is some level of supervision by the current operations supervisor position within each RPA operations center, this is in no way the same thing as the mission commander (MCC) role proposed here. The supervisor fulfills an AFI 11-418 requirement for supervision, but the position is not doctrinally incorporated into the tactical operations of the RPA.
6. It is assumed that as the MCC position is developed over time, hardware solutions will increase the ability of an MCC to perform the role. For this discussion, the intent is to communicate that current operations center technology exists to provide sufficient situational awareness to perform the MCC role.
7. Department of the Air Force, Air Force instruction 11-202, 3: *General Flight Rules*, 10 August 2016, 7, http://static.e-publishing.af.mil/production/1/af_a3/publication/afi11-202v3/afi11-202v3.pdf.

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