Who should fly?

Air Force shows no signs of buckling in UAV pilot debate

By Ben Iannotta

The U.S. Army plans to retire the traditional sticks and rudders its UAV operators are relying on to steer early versions of the Predator-derived Sky Warrior aircraft over Iraq and Afghanistan. Trackballs and clickable screen displays are set to replace those sticks and rudders as the Army seeks to capitalize on what it sees as an ample supply of young, computer-savvy enlisted people willing to learn how to fly UAVs and drop bombs. Those operators are to form the core of the Sky Warrior UAV fleet the Army is building to rival the Air Force's Predators and Reapers.

Meanwhile, at Wright-Patterson Air Force Base, Ohio, the Air Force is headed in nearly the opposite direction as it starts work on a new control station for those Predators and Reapers called the Advanced Cockpit. This prototype station is not scheduled to be ready until 2010, but one thing is certain about its design: It will be made to feel more like an F-16 cockpit in the belief that F-16 pilots will remain a mainstay of the service's Predator-Reaper corps.

"Right now, the throttle and joystick don't have a lot of the HOTAS [hands-on-throttle-and-stick] functionality," said Carl Thunberg, the Air Force's Predator and Reaper project engineer. "We have enhanced that technology so we will have a throttle and stick that's very similar to an F-16."

The divergent UAV philosophies of the Army and Air Force illustrate the challenges Congress, op-ed writers and defense officials are facing as they attempt to push the Air Force to accept enlisted personnel as UAV operators. Advocates believe such a change and others could help the Air Force keep pace with the growing demand for UAV flights in Iraq and Afghanistan. The Air Force's Predators and Reapers must serve the Army, Marines and Special Forces. Most of the demand is for full-motion video of events on the ground, although commanders also crave the ability to quickly strike targets with Hellfire missiles.

For its part, the Air Force continues to insist that pilots — in the Air Force, that means officers — are best-equipped to fly UAVs that can watch targets and drop 3,000 pounds of bombs. "The business is killing people and killing the right people, and not inflaming political sensibilities. That's a real high-stakes game," an Air Force official said. "The idea of not having a rated officer firing a weapon right next to troops in contact, I don't see that."

The Army sees it differently. Its new ground control station will be "like a video game," said Army Col. Don Hazelwood, project manager for the Army's UAV systems, who was scheduled to retire in July. "The air vehicle operator simply tells it where to go, and using his trackball, he can steer it that way." Hazelwood said trackballs are the best way to control today's UAVs, which are more like gliders than highly maneuverable warplanes. "When I do have an aircraft five or 10 years from now that can do 90- or 180-degree turns or barrel rolls, will I need a stick or rudder? My opinion is, yeah, I think so."

The Air Force and Army do not agree on what to call the people who sit at consoles

STAFF SGT. BRIAN FERGUSON, U.S. AIR FORCE

Air Force officers fly Reaper UAVs, such as this one armed with Hellfire missiles. The Army will trust enlisted soldiers with its armed Sky Warriors.

operating unmanned aircraft. The Air Force calls them pilots, but the Army calls them operators. The Army calls its forthcoming new console the Universal Ground Control Station — formerly the One System Ground Station. The Air Force has no plans to use this "universal" station, due to be completed in 2012 by AAI Corp., and it has chosen the word "cockpit" to describe its next Predator-Reaper station.

Enter Congress. Lawmakers and their staffs believe the Army has been successful with its long tradition of entrusting enlisted personnel with weapons. In report language set to accompany the 2009 defense authorization bill, lawmakers have instructed the Defense Department, albeit in cryptic lawmaker parlance, to explain why it cannot adopt the Army approach.

The language directs the Defense Department to examine the "current qualifications for UAV operators" across the U.S. military services and consider "a common qualification standard and training system." The message is subtle but clear: Think hard about how the Army creates its UAV operators.

"It's difficult for us to come right out and say, 'Air Force: You shall not use officers as pilots; you shall use sergeants,' " a congressional staff member said. "But it's perfectly obvious to everybody except senior levels of the Air Force that that's what they need to do."

It is not just Congress that is asking the questions: "It's an active debate within the [Department of Defense] right now," another congressional staff member said.

GOING KINETIC

So far, the Army has used its UAVs mostly to survey convoy routes, respond to roadside bomb explosions and provide overhead imagery during fire fights. But the Army is pushing hard to arm more of its UAVs. It wants to close the time gap between gathering intelligence and striking targets, just as the Air Force has done with its Hellfire-equipped Reapers. Reapers can return full-motion video of the ground one moment and destroy targets the next. The Army plans to do the same with its new Sky Warriors.

"The Army is in the process of weaponizing the Warriors right now with Hellfires," Army spokeswoman Kim Henry said.

Last September, the Army went kinetic with a UAV for the first time when a Northrop Grumman-built MQ-5A Hunter UAV fired a gliding Viper Strike bomb at two men spotted planting a bomb.

To the Army, trusting enlisted soldiers with armed UAVs is a logical extension of the way the service has done business for decades. An enlisted person "could be 19 years old and flying a $25 million Apache full of Hellfires and 30-millimeter cannon," Hazelwood said. The same is true for armed UAVs, he said. It is nothing revolutionary.

Air Force UAV officials disagree, but they are trying to move the argument away from that point. If the goal is to increase UAV flights over Iraq or Afghanistan even more than the Air Force is already doing, the biggest problem isn't a lack of pilots. Earlier this year, the Air Force's Predator and Reaper commander, Col. Christopher R. Chambliss, said no one is telling him there aren't enough Air Force pilots ready to learn how to fly UAVs. The dilemma, he said, would be pulling UAV operators from combat operations to train new operators.

FREE FALLING

If there is any evidence that the Air Force believes it might lose the argument over who should fly its UAVs, it is in the service's approach to the Advanced Cockpit program. The Air Force began the program in March by awarding a 27-month, sole-source contract to General Atomics. The F-16 control stick will feature prominently in the prototype, "but you can't build an interface that's just going to allow someone who's flown an F-16 to be successful," Thunberg said. "It has to run the gamut from novices to F-16 pilots."

Thunberg said engineers and human factors experts will develop four precursors before building the prototype. "The idea is to get a lot of different techniques out on the table and allow the users to decide what they like," he said.

Engineers plan to experiment with touchscreens and drop-down menus for setting altitude, airspeed and direction. They will consider other interfaces that might appeal to the "Xbox generation," Thunberg said.

Other changes will be meant to streamline the control console and procedures in ways that would help a UAV operator of any skill level.

"A lot of Predator pilots or sensor operators will tell you that you kind of live in peril of going through your keystrokes and happening upon that fall-out-of-the-sky button," Thunberg said. "When I'm flying a Predator now, I must have five or six button presses in a hierarchical menu to change the altitude. It's kind of ridiculous, but that's just

the way it is because the present [ground control station] is still in kind of a prototype configuration."

That's one drawback the Air Force would be happy to let fall out of the sky.

HAPPY LANDINGS

Without a supply of pilots familiar with flight sticks, the Army has placed more emphasis than the Air Force on developing automated takeoff and landing systems for its UAVs. The Army uses such a system now for its small Shadow UAVs built by AAI Corp. With the help of General Atomics, it is attempting to develop a similar system for the Sky Warrior. General Atomics is flight-testing the system now in California, Army spokeswoman Henry said.

Thunberg said he is developing the Advanced Cockpit with a Predator-Reaper automated takeoff and landing system in mind. He also said he recently met with Air Force counterparts who work on the control system for the services' high-flying Global Hawk aircraft to see if he could get ideas from them. Because Global Hawk's missions are strategic — for instance, monitoring suspicious factories or military sites from the safety of international airspace — its flights are pre-programmed and largely automated, including the takeoff and landing.

More automation "is one of the specifications that we're driving toward, but not an incredibly automated system. The fact of the matter is that the aircraft doesn't really avail us of that opportunity," Thunberg said.

The Army's Hazelwood said Shadow's automated system is having operational payoffs. UAV flights in Iraq were hampered by dust storms in May and June that created zero-visibility conditions and grounded numerous aircraft. Shadows were able to keep flying because of their automated system, he said. "When you're talking dust storms in the desert, there could be three to five days where everything's grounded. What happens when that happens in theater? Well, you can watch it on the news. The guys come out, and they set up their mortars and they start mortaring because they know everything's grounded," he said.

Within six to 12 months, the Army will be able to launch and land Sky Warriors in a dust storm, he said.

Hazelwood said he also expects the addition of a Sky Warrior automated system to improve the Army's UAV flight record. "If you look at accidents, historically, landings and takeoffs are one of your most challenging and high-risk events," he said. "So we've just taken that high-risk area out of how we operate our unmanned aircraft, and [it] allows us to get young people trained very quickly, operating our systems."

BREAKING BREAD

The Air Force and Army also disagree vehemently about the best locations for their UAV ground control stations. Air Force pilots control Predator and Reaper UAVs during missions from Creech Air Force Base, Nev., using commercial satellite links to send commands. Air Force launch and recovery teams are stationed abroad to steer the aircraft into the air and land them. Army officials believe all UAV operators should be based in the battlezones together with the soldiers they are serving.

U.S. AIR FORCE

A U.S. Air Force officer flies a Predator from a ground control station in Iraq. The Air Force allows only rated pilots to control the flight of a UAV.

"You're eating together when they come back in from their missions. You're all part of that team. We will have that same sense of urgency, that same sense of camaraderie; that same sense of loss when somebody is hurt or injured. And that same sense of accomplishment when no one is hurt or injured," Hazelwood said. "It's just the way we fight, and we have no intention of changing that."

The services also differ over what is the best process for deciding where to fly their UAVs. In the case of the Predators and Reapers, requests for UAV coverage from the Army, Marines or Special Forces must usually go through the U.S. Joint Forces Air Component commander's office, where staff prioritize the requests into air tasking orders.

The Army fought for its own UAV fleet in part to escape that tasking process. Hazelwood said the Army demands more tactical flexibility than could be provided any other way.

"Let's say there's a convoy going from Baghdad to Mosul along the main supply route, and an [improvised explosive device] goes off," he said. The survivors in the convoy would call their headquarters, where commanders would be watching UAV feeds and monitoring the locations and altitudes of UAVs. "Because the Army has the flexibility to move UAVs around, they can immediately call up the unit and say, 'Move your UAV 20 kilometers,' " Hazelwood said.

Those who believe the Air Force should follow the Army's lead by allowing enlisted people to fly UAVs are less certain about the wisdom of the Army's tasking process. "The problem with the Army approach is that the planes belong to them and only them. If a Marine unit 50 miles away has a higher priority, it's screwed," a congressional staff member said.

The way Hazelwood sees it, these debates are a natural symptom of an unmanned aircraft domain that is in its infancy. It would be best not to crimp the creativity of each service, he suggested. In 1935, when the U.S. began to see German expansion as possible threat, the country relied on biplanes. Twelve years later, it had jets. Unmanned aircraft are in a comparable period of discovery, Hazelwood said.

"All the services have them. We each have different roles and missions, and we're discovering different ways to apply that technology on the battlefield. I don't know why anyone would want to say only one service can determine or discover the many uses of that," he said. ■