**1 . Date: 10-05-2024Armed ISR / ISTAR - MALE - General - Software'Swarm pilots' will need new tactics—and entirely new training methods: Air Force special-ops chiefURL: https://www.defenseone.com/policy/2024/05/swarm-pilots-will-need-new-tacticsand-entirely-new-training-methods-air-force-special-ops-chief/396477/**

TAMPA—Experiments with ever-larger drone swarms are revealing a need for new concepts of operations and new ways of training human operators, the Air Force Special Operations Forces Command says.

In the next few months, AFSOC will expand upon a groundbreaking December experiment that saw a single drone crew guide not one but three MQ-9 Reapers and even to air-launch a smaller Group 2 drone as part of the command’s Adaptive Airborne Enterprise effort. Now, the command aims to repeat the experiment with even more drones—and add the ability to hand off control to troops in the field.

“The hope with the summer now is: how can we start to bring those aspects together and then work with our joint force teammates? And now how do we manage multiple MQ-9s air-launching a small number of” smaller drones, “and then hand that swarm off to a joint force teammate, whether in a terrestrial or maritime situation?” Lt. Gen. Tony Bauernfeind said in an interview at the SOF Week conference here.

But the Air Force still has some pioneering work to do in designing concepts of operation for piloting drone swarms, and that means more focus on what aspects of flight or drone operation to automate and what to leave to humans.

“We're gonna have to break some old paradigms,” Bauernfeind said. “We really have to reinforce to ourselves that it's going to be a human on the loop, not in the loop”—that is, the operator will monitor a drone's execution of its assigned mission rather than steering the thing. “Cognitively, it will require us to train our air crews in a new way.”

“I think is going to be a new opportunity,” he said. “You got to figure out how to handle an epic level of multitasking.”

The task could get even more complicated, depending on how many of the drones are expected to return home, he said.

Bauernfeind is also interested in how Ukrainian forces are using 3-D printers to make small drones near the front line. “3-D printing is really bringing in a new generation of [innovation], how quickly we can mass produce some of the smaller UAVs. And so I see an opportunity there. How can we quickly ensure we have the right levels of stock, the right levels of sensors? And so it's pretty impressive to see where some of our industrial teammates are going with 3-D printing.”

But some innovations in the Ukrainian battlespace are more controversial, such as the use of autonomy to find and hit targets on the battlefield. The Pentagon has ethical principles to govern its development and use of AI in conflict. But concern is mounting that the United States might abandon those principles if it found itself in a conflict in which it was losing.

Those questions aren’t likely to go away anytime soon. Said Bauernfeind: “I think this is an area that is ripe for deep intellectual thought. And what I mean by that is, I think, technically we're going down a pathway where automation is a real aspect. But I think we have to have some very deep strategic intellectual thought on where should that balance be? So while we're learning lessons from Ukraine, there's also an aspect of Ukraine is a nation in the fight of survival. So there are certain, probably, policy constraints that they have taken away because they see it as an existential threat to their actual survival as a nation.”

It’s an urgent question not just for military commanders, he said, but also U.S. policymakers and academia. “Are we ready for the second-, third-order effects when…a machine ultimately fails and hits something that has catastrophic political and strategic effects?”

**2 . Date: 06-03-2023Armed ISR / ISTAR - MALE - General - SoftwareThe Reaper UAV Is Getting Its Own Drone SwarmURL: https://www.defenseone.com/technology/2023/03/reaper-uav-getting-its-own-drone-swarm/383676/**

The venerable Reaper UAV could become a mothership for a single-operator drone swarm, the head of Air Force Special Operations Command said recently.

AFSOC’s Adaptive Airborne Enterprise project aims to develop highly autonomous swarms of drones for intelligence, surveillance and reconnaissance—and perhaps even strike, Lt. Gen. Tony D. Bauernfeind told an audience at the Global SOF Special Air Warfare Symposium in Fort Walton Beach, Florida. The project also aims to reduce the number of humans needed to control such a swarm down to just one operator.

“A2E is a three-phase initiative to develop airborne human-machine teams commanding a family of uncrewed and optionally crewed” aircraft, Bauernfeind said.

These swarms of Group 1 and 2 drones—essentially, ones weighing up to a few dozen pounds—would launch from MQ-9 Reapers and perhaps other medium-sized uncrewed aircraft, he said.

The overall vision is to use artificial intelligence and advanced human-machine Interfaces to allow operators to control multiple large and small drones simultaneously. That would help AFSOC troops cover more terrain and hit more targets with a variety of effects, including cyber, electronic warfare, etc.

With a 30-hour endurance and decent payload, the Reaper has long been a cornerstone of U.S. special operations forces’ ISR efforts.. But the way the United States used the platform during the wars of Afghanistan and Iraq hardly fits with the idea of an “unmanned” aircraft. Human crews, sometimes thousands of miles away, would spend long hours piloting the drones, observing events on the ground and analyzing the footage, so much footage that AFSOC eventually launched an AI program just to help analysts sift through all the video.

Bauernfeind’s vision also suggests an upgrade to the interface that drone crews use to pilot unmanned aircraft—something more like a laptop instead of a massive trailer in the Nevada desert.

“In contested or denied environments, AFSOC is shifting from multiple operators controlling a single MQ-9A to a single air commando directing a family of systems,” AFSOC spokeswoman Lt. Col. Rebecca Heyse said in a statement. “MQ-9 units will leverage multiple platforms and incorporate autonomy and eventually Artificial Intelligence technologies to deliver capabilities to SOF, the Air Force, and the joint force across the spectrum of operations. A2E will increase the number of platforms AFSOC operators can manage by an order of magnitude, and through those systems, cover more terrain and prosecute more target across the spectrum of operating environments,”

AFSOC will take possession of its first MQ-9B by the end of the calendar year, Heyse said.

“The MQ-9Bs currently slated for AFSOC will not be used operationally. They will be used to rapidly pathfind A2E concepts and technologies, planned to include sUAS and autonomy integration, beginning in calendar year 2024.”

**4 . Date: 02-05-2023Armed ISR / ISTAR - MALE - General - AFSOC, Total Force lands MC-130J, MQ-9, A-10s, MH-6s on Wyoming HighwaysURL: https://www.dvidshub.net/news/443874/afsoc-total-force-lands-mc-130j-mq-9-10s-mh-6s-wyoming-highways**

Casper, Wyoming—History was made during Exercise Agile Chariot as an MC-130J Commando II, an MQ-9 Reaper, two A-10 Thunderbolt IIs and two MH-6 Little Birds landed on Highways 287 and 789 April 30 and May 2, 2023, respectively. “The requirement here was clear: how do we get after Agile Combat Employment and hone the skills required to win a near-peer competitor fight,” said Lt. Gen. Tony Bauernfeind, AFSOC Commander. “This exercise is a great example of what happens when Air Commandos come together to solve problems and test what we will see in future fights.” Exercise Agile Chariot was an Air Force Special Operations Command-led event focused on Agile Combat Employment and involving personnel and assets with the Total Force. During the exercise, participating units, in coordination with federal, state and local agencies, landed an MC-130J Commando II, an MQ-9 Reaper, and two A-10 Warthogs on Wyoming Highway 287, while conducting a Forward Arming and Refueling Point (FARP), Integrated Combat Turnarounds (ICT) and taking off from the highway. “When you get the right people, at the right time, in the right place, you can accomplish impressive feats,” added Bauernfeind. “Agile Chariot accomplished major milestones for our AFSOC community—all of which lend credence to our pathfinding nature—including the first-ever landing of an MQ-9 on a highway, an MC-130J landing on a highway and simultaneously conducting FARP and ICTs with A-10s, and our special tactics Airmen establishing and securing a 30,000-foot usable runway on a public highway. " According to Maj. Matt Waggy, Exercise Agile Chariot director and mission commander, landing an aircraft on a highway is not a novel idea as it’s been done before, but what the participants did with this exercise matters, particularly landing an MC-130J onto a remote highway and supplying munitions and fuel to assault aircraft without the need of large-footprint logistics or any line-hauled items via roadways. “It’s a major step in the right direction and it provides a very usable arrow for our ACE quiver,” added Waggy. “Our Joint Force Commander can now look at these capabilities as very real options to solve real-world problems.” The 15th Special Operations Squadron also landed an MC-130J Commando II with two MH-6 Little Birds onto Wyoming Highway 789, conducting a time-sensitive, personnel recovery mission with Airmen from the 123rd Special Tactics Squadron. Airmen with the 123rd Special Tactics Squadron secured landing zones and operated the highways as usable runways during both of the exercise’s major events. According to Lt. Col. Dave Meyer, Deputy Mission Commander for Exercise Agile Chariot, the exercise was unique because the aircraft landed on highways that were not purposely built for it. “In [Agile Chariot], we used highways that weren't purposely built for landing aircraft. We determined that the roads were adequate to land a relatively large aircraft like a C-130 on it and be able to conduct operations,” said Meyer. “Not just land, but conducting Forward Arming and Refueling, turning the aircraft around, and maneuvering in a really confined space. So now, we’ve demonstrated that we don’t need runways in order to project power.” In recent years, AFSOC and Total Force organizations have diligently trained ACE concepts. Examples include A-10s and C-146As landing on Michigan’s highway M-28, C-146As taking off and landing on Latvian highways, and the MC-130J landing on a highway in Sweden. Agile Chariot, however, was unprecedented in terms of its scope as more aircraft participated in highway landings than ever before. “An adversary that may be able to deny use of a military base or an airfield, is going to have a nearly impossible time trying to defend every single linear mile of roads. It’s just too much territory for them to cover and that gives us access in places and areas that they can’t possibly defend,” Meyer said. Exercise Agile Chariot tested the concept of Agile Combat Employment (ACE)—an operational scheme of maneuver executed within threat timelines to enhance survivability while generating combat power—through two demonstrations, as well as Forward Arming and Refueling Point (FARP), Integrated Combat Turnarounds and the infiltration and exfiltration of Air Force Special Operations (AFSOC) personnel with US Army Special Ops Aviation Command (USASOAC). Landing the MQ-9 Reaper on a highway has opened the door for future capabilities. “The capabilities witnessed during Agile Chariot showcases how the MQ-9 can launch and recover from remote locations and extend its operational reach to protect American interests globally,” said Lt. Col. David Payne, 2 Special Operations Squadron commander. “As Reservists, we are helping transform for the future while simultaneously flying two persistent combat lines.” The event offered an ideal venue to continue assessing the effectiveness for how the weapons system can be used in today’s changing landscape for combat operations. “This is yet another demonstration of the vital role the MQ-9 is capable of performing for the Total Force,” said Lt. Col. Brian Flanigan, 2nd SOS director of operations. “One of the Reaper’s biggest assets is its versatility as it has the ability to support intelligence, surveillance and reconnaissance and close air support missions. “The MQ-9 can now operate around the world via satellite launch and recovery without traditional launch and recovery landing sites and maintenance packages,” said Flanigan. “Agile Chariot showed once again the leash is off the MQ-9 as the mission transitions to global strategic competition. The depth of experience in the Air Force Reserve allows Citizen Airmen the ability to execute AFSOC’s mission any time, any where.” The exercise also sought to operationalize ACE across four key areas: codifying repeatable and understandable processes; forces that are organized, trained and equipped appropriately; theaters postured with the necessary equipment, assets and host nation agreements; and joint service and partner nation integration/interoperability. “Total Force training is an essential aspect of ensuring our military is always ready to respond to any crisis or situation that may arise,” said Wyoming Governor Mark Gordon. “Exercises such as this one bring together the Active, Guard, and Reserve components of the military to train together, helping them to work seamlessly and effectively when called upon to serve. The exercise was coordinated with various whole-of-government agencies in Wyoming and supported by both the Wyoming Department of Transportation and Wyoming National Guard. Agencies involved included the Federal Aviation Agency, National Geospatial-Intelligence Agency, National Weather Service, Federal Bureau of Investigation, Wyoming U.S. Forestry, Wind River Inter-Tribe Council and the Bureau of Indian Affairs. “Wyoming has a strong military community with service members and families rooted through F.E. Warren Air Force Base, the Wyoming Army National Guard and the Wyoming Air National Guard,” added Gordon. “Our state is well-positioned to support Total Force training exercises.” Participating units include the 1st Special Operations Wing from Hurlburt Field, Florida, flying MC-130J Commando IIs and leading Exercise Agile Chariot; the Michigan Air National Guard’s 127th Wing from Selfridge Air National Guard Base, Michigan, flying two A-10 Thunderbolts; the 160th Special Operations Aviation Regiment (Airborne) from Fort Campbell, Kentucky, flying MH-6M Little Birds; the 123rd Special Tactics Squadron from Louisville International Airport, Kentucky, establishing and securing the landing zone and controlling the airspace; the 2nd Special Operations Squadron, 919th Special Operations Wing from Duke Field, Florida, landing the MQ-9 Reaper; and the 65th Special Operations Squadron from Hurlburt Field, Florida, controlling the take off and return flight for the unmanned aerial vehicle. “As we looked for places to train, Wyoming jumped out at us,” said Col. Allison Black, 1st Special Operations Wing commander. “Our partnerships with the state allowed us to come here and execute our tactics, techniques and procedures that we couldn’t do otherwise and for that we are extremely grateful.”

**2 . Date: 28-12-2023Armed ISR / ISTAR - MALE - General - PlatformRussia’s MQ-9 Reaper Drone Replica Gets Accelerated Delivery That Could Pose ‘Sirius’ Trouble For UkraineURL: https://www.eurasiantimes.com/russia-gets-accelerated-delivery-of-its/**

While media reports from Russia that quote the representatives from the developer have not identified the system, the Russian Air Force’s (RuAF) prior operational history, press coverage about its ongoing programs, and the framing of the report itself strongly suggest it is the Sirius Unmanned Combat Aerial Vehicle (UCAV).

Russia has long been reported to be deficient in Medium/High-Altitude Long-Endurance (MALE/HALE)-class reconnaissance-strike UCAV like the US MQ-9 Predator. Such platforms offer tremendous semi-strategic advantages by combining long-duration flight times with air-to-ground strikes using guided missiles and bombs.

Russia introduced some units of the Sirius earlier this year, but a larger fleet allows for covering a larger area of the 600-kilometer frontline in the east and south of Ukraine.

Russia recently lost three Su-34s that were being used to release FAB-500 and other unguided drop bombs with Universal Module for Planning and Correction (UMPC) modules that turned them into smart glide bombs.

The munitions caused a devastating impact on Ukrainian positions for nearly three months. This was particularly complicated by the fact that they are invulnerable to any known Soviet or Western air defense system with Ukraine, since they have no rocket exhaust or electromagnetic emissions for surface-to-air missiles to lock on to.

The reconnaissance and strike drone Sirius is a further development of the Orion UAVs and is powered by two turboprop engines, unlike the Reaper’s single power plant, with a claimed flight duration of approximately 20 hours.

The maximum height is 7000 meters (23,000 feet), with a cruising speed of 180 km/h and a range of 3,000 kilometers. Also, various sources claimed that this UAV would be equipped with its own satellite communications system.

A TASS report quoted a statement from the St. Petersburg-based Joint Stock Company (JSC) Kronstadt, which developed the Sirius UCAV, also known as the Inokhodets-RU. The aerospace company merely claimed to have met its order book with the Russian military without revealing the nature of the “deliveries.”

JSC Kronstadt “announced” that it “completed deliveries under the state defense order ahead of schedule.” “The organization refused to clarify information about the supplied products,” the report added. “Thanks to coordinated work, the enterprises of the Kronstadt company, including the Dubna Machine-Building Plant, completed deliveries within the framework of the state defense order ahead of schedule,” the company said.

Dubna is possibly involved in manufacturing components, advanced assemblies, sub-assemblies, and precision parts for the system – assumed to be the Sirius UCAV. Whether it is a vendor for Kronstadt or an assembly and integration factory as well that puts together the final product, is unclear.

The report then concludes by identifying the nature of projects at Kronstadt and naming Sirius in that context, but not with reference to the latest order it claims to have met. “JSC Kronstadt is a full production cycle enterprise for the creation of unmanned aerial systems. The company is the developer and manufacturer of the Orion attack drone, also known as the Pacer.”

The fact that the unidentified weapon platform is the Sirius UCAV can also be confirmed by a closer look at Dubna. Interestingly, Dubna has been placed under international sanctions, among dozens of Russian bodies and officials, after following the war. The website Open Sanctions mentions JSC Dubna (or Dubnensky) as a sanctioned entity that is “entirely contributing to Russia’s military-industrial complex.”

“The company develops Orion reconnaissance and strike drones, as well as maritime drones for the Russian armed forces. Drones manufactured by Dubnensky Machine-Building Plant JSC have been equipped with guided missiles. Between February and Apr 2022, there were six confirmed kills in Ukraine by Russian Orion drones manufactured by Dubnensky Machine-Building Plant JSC,” the website said.

The company’s own website, which identifies itself as the Pelcom Dubna Machine-building factory, says it specializes in “mechanics, electrical engineering, hydraulics, pneumatic automation, electrics, electronics, software, and laser technologies development.” These systems constitute drones and aircraft.

A previous EurAsian Times article described how MALE/HALE-class UAVs tremendously boost Russian ground operations by giving an early warning about any Ukrainian field maneuvers while also collecting targeting data for both aerial strike platforms and ground formations.

Typical with Russian doctrine, Sirius forms a “reconnaissance and fire networked circuit” with Su-34, Su-25 strike aircraft, Ka-52, and Mi-28 heavy attack helicopters, artillery batteries, and ground units by staying safely behind the frontlines.

With more such drones active, Ukraine will find it even more difficult to launch surprise ground raids with infantry or artillery on Russian positions along the entire frontline, and not just certain patches where Sirius drones are not operating.

Kyiv has successfully restricted Russia’s ability to use UMPC-enabled bomb-dropping fighter bombers like the Su-34s. But the victory has also coincided with Russia’s failing efforts to compensate for its weakness in UAVs and strengthen its drone sector, which is beginning to bear fruit.