An MX-15 sensor ball like this, which provides infrared and electro-optical capabilities, is attached underneath a wing of Civil Air Patrol's first two Surrogate Unmanned Aircraft System planes. A recent modification by the Air Force Research Laboratory placed the ball inside the belly of Surrogate UAS No. 3, thus enhancing its use in air-land integration combat training.

By Steve Cox

Civil Air Patrol's Surrogate Unmanned Aircraft System

Redesigned mock unmanned aircraft vehicle ramping up effectiveness of CAP's newest homeland security program

Thanks to the Air Force Research Laboratory, Civil Air Patrol now has a better way to help train U.S. and allied warfighters before they deploy to combat zones overseas.

AFRL's Directed Energy Directorate at Kirtland Air Force Base, New Mexico, recently modified a CAP Cessna T206H to be used for military training exercises. The Surrogate UAS plane is the latest of three such aircraft in the CAP fleet to be equipped with intelligence, surveillance and reconnaissance sensors that provide the capability to mimic unmanned aerial vehicles in the Air Force inventory.

Training troops for deployment abroad is the primary focus of CAP's Surrogate UAS program. It's part of CAP's increasing contributions to homeland security efforts nationwide. As the official auxiliary of the Air Force, CAP performs about 85 percent of continental U.S. inland search and rescue missions, as tasked by the Air Force Rescue Coordination Center, which credits CAP with saving an average of 70 lives each year. But its members also perform homeland security, disaster relief and drug interdiction missions at the request of federal, state and local agencies.

The Air Force Research Laboratory has been part of Surrogate UAS since its inception in 2008, and the lab recently completed and delivered the third aircraft to CAP, program manager J.P. Sena said.

"No. 3 is a redesign of the first two, which had a wing-mounted turret," Sena said. "We designed the Cessna 206T with a retractable turret stowed in the belly of the aircraft that allows for longer flight times by reducing drag when the turret is not in operation. The operator station was also designed with ergonomics in

mind to allow for more leg room, ease of controls, central location for all the equipment and a plethora of capabilities for the sensor operator."

All three of CAP's Surrogate UAS planes are equipped with MX-15 sensor balls to provide infrared and electro-optical capabilities similar to the remotely piloted aircraft in the Air Force inventory. This latest modification makes it even easier to use the planes in training exercises where the Air Force and its allied air forces engage in air-land integration combat training.

The Surrogate UAS program is executed through an agreement between Civil Air Patrol, 1st Air Force and Air Combat Command in support of all U.S. Department of Defense services as well as allied partner nations to participate in 21 exercises annually.

- Ten exercises are supported at Green Flag West through the 549th Combat Training Squadron at Nellis Air Force Base, Nevada, for training conducted at Fort Irwin, California.
- Another 10 exercises are supported at Green Flag East through the 548th Combat Training Squadron at Barksdale Air Force Base, Louisiana, for training conducted at Fort Polk, Louisiana.
- Emerald Warrior, an Air Force Special Operations Command exercise, is supported in Apalachicola along the coast of Florida.

"With the use of the Surrogate UAS planes during Green Flag exercises, troops training for deployment get experience with what they will see overseas while the government can keep the high-value assets overseas to continue to complete missions," Sena said. "Our government saves millions by keeping the assets in theater and completing training using the Surrogate Unmanned Aircraft System."

Civil Air Patrol's operational costs are significantly less than the former contractor used for the exercises, said John Desmarais, CAP's director of operations.

"It used to cost Air Combat Command approximately $200,000 an exercise for five days of contractor supported flying," Desmarais said. "It now costs approximately $65,000 an exercise for seven to 10 days of CAP support, and not only does CAP provide more days on site, it is also able to adjust to warfighter needs faster and without contract-negotiated changes to better meet their needs to make training more realistic."

Joint National Training Center, Air Combat Command and Air Force Special Operations Command funding is used to provide the infrastructure, operations and maintenance and staffing needed to support the Surrogate UAS program; CAP provides the planes for the program.

Joint funding was used to modify the three planes being used:

- The first, a Cessna 182Q, was delivered in the fall of 2009 to begin operations at Green Flag East that October.
- The second, another Cessna 182Q, was delivered in the spring of 2010 to begin operations at Green Flag West that July. This plane has since been moved to Green Flag East with delivery of the third Surrogate UAS Cessna.
- That plane, a new Cessna T206H, was delivered this January and is now supporting Green Flag West

Intelligence, surveillance and reconnaissance sensors were added to the Cessna T206H so it can mimic an MX-15 aboard remotely piloted aircraft. Air Force Research Laboratory's Directed Energy Directorate at Kirtland Air Force Base modified the Civil Air Patrol plane for use in military training exercises.

Tom Shubert, second from right, director of U.S. Air Force Auxiliary Programs at the Pentagon, representing the Office of the Deputy Assistant Secretary of the Air Force for Reserve Affairs, is briefed on Civil Air Patrol's Surrogate UAS program. The briefing occurred during CAP's 2014 National Conference in Las Vegas and also included a tour of CAP's Green Flag West headquarters.

Photo by Susan Schneider, CAP National Headquarters

operations.

In addition to employing them for military training, CAP has used the first two Cessnas in relief efforts for disasters such as Hurricane Sandy in 2012.

"Assets assigned to the Surrogate UAS program can also be used to support other Defense Support to Civil Authorities missions like disaster relief and search and rescue operations with the approval of the 1st Air Force commander," Desmarais said. "That is certainly a viable option for the future, but our primary focus remains on providing effective training for U.S. troops."

The Surrogate UAS program has matured and expanded over the years to meet warfighter needs.

"The original Surrogate UAS program was only expected to be a stopgap measure that was supposed to end in 2012 with the return of remotely piloted aircraft from overseas," Desmarais said. "The needs for RPAs have been steadily increasing worldwide, though, and ACC headquarters has indicated to CAP that this program will likely continue at least through fiscal year 2019, and likely beyond that."

Realistic training of the warfighters and of the CAP members preparing them is key.

"All after-action reports by the Air Force have been extremely positive about CAP's support and the high level of training received by the military ground personnel," Desmarais said.

A new agreement among ACC, 1st Air Force and CAP is in the final stages of development to codify the Surrogate UAS program's long-term stance and needs.

In the beginning, the Surrogate UAS program was staffed entirely by a small cadre of CAP volunteers with prior military combat experience. They received updated training from ACC personnel in the latest Tactics, Techniques and Procedures. As the program matured, CAP formed two squadrons at the national level to bring in more experienced personnel from across the country and integrate traditional CAP members with little to no combat experience.

"These squadrons are now being moved into the normal CAP wing operations structure, and TTPs are being refined and taught with ACC assistance in a formal school program held twice annually along with on-the-job training at GFE and GFW," Desmarais said.

"There are more than 70 active members supporting the Surrogate UAS program, and we anticipate adding many more now that CAP has a third aircraft and the program is becoming more locally based."

Flying in support of the Surrogate UAS program is consistently high.

- In fiscal year 2010, CAP flew 689 hours for Surrogate UAS operations.
- In fiscal year 2014, CAP flew 1,204 hours.
- So far this fiscal year, CAP has flown 871 hours for Surrogate UAS operations and still has two exercises to complete and new participant training to support.

The recent aircraft modification will boost those numbers as well.

"The capabilities of the Enhanced Surrogate UAS will far exceed the previous two and I'm sure will be used in countless other ways to support the CAP mission, as well as the U.S. government," Sena said.

Desmarais agrees with Sena's assessment.

"The Civil Air Patrol Surrogate UAS program provides outstanding support to U.S. and allied warfighters from around the world, and we anticipate doing so for the foreseeable future." ▲

Jeanne Dailey of the Air Force Research Laboratory contributed to this report.