The New York Times

January 11, 2010

Drone Flights Leave Military Awash in Data

By CHRISTOPHER DREW

HAMPTON, Va. — As the military rushes to place more spy drones over Afghanistan, the remote-controlled planes are producing so much video intelligence that analysts are finding it more and more difficult to keep up.

Air Force drones collected nearly three times as much video over Afghanistan and Iraq last year as in 2007 — about 24 years' worth if watched continuously. That volume is expected to multiply in the coming years as drones are added to the fleet and as some start using multiple cameras to shoot in many directions.

A group of young analysts already watches every second of the footage live as it is streamed to Langley Air Force Base here and to other intelligence centers, and they quickly pass warnings about insurgents and roadside bombs to troops in the field.

But military officials also see much potential in using the archives of video collected by the drones for later analysis, like searching for patterns of insurgent activity over time. To date, only a small fraction of the stored video has been retrieved for such intelligence purposes.

Government agencies are still having trouble making sense of the flood of data they collect for intelligence purposes, a point underscored by the 9/11 Commission and, more recently, by President Obama after the attempted bombing of a Detroit-bound passenger flight on Christmas Day.

Mindful of those lapses, the Air Force and other military units are trying to prevent an overload of video collected by the drones, and they are turning to the television industry to learn how to quickly share video clips and display a mix of data in ways that make analysis faster and easier.

They are even testing some of the splashier techniques used by broadcasters, like the telestrator that John Madden popularized for scrawling football plays. It could be used to warn troops about a threatening vehicle or to circle a compound that a drone should attack.

"Imagine you are tuning in to a football game without all the graphics," said Lucius Stone, an executive at Harris Broadcast Communications, a provider of commercial technology that is working with the military. "You don't know what the score is. You don't know what the down is. It's just raw video. And that's how the guys in the military have been using it."

The demand for the Predator and Reaper drones has surged since the terror attacks in 2001, and they have become among the most critical weapons for hunting insurgent leaders and protecting allied forces.

The military relies on the video feeds to catch insurgents burying roadside bombs and to find their houses or weapons caches. Most commanders are now reluctant to send a convoy down a road without an armed drone watching over it.

The Army, the Marines and the special forces are also deploying hundreds of smaller surveillance drones. And the C.I.A. uses drones to mount missile strikes against Al Qaeda leaders in Pakistan.

Air Force officials, who take the lead in analyzing the video from Iraq and Afghanistan, say they have managed to keep up with the most urgent assignments. And it was clear, on a visit to the analysis center in an old hangar here, that they were often able to correlate the video data with clues in still images and intercepted phone conversations to build a fuller picture of the biggest threats.

But as the Obama administration sends more troops to Afghanistan, the task of monitoring the video will become more challenging.

Instead of carrying just one camera, the Reaper drones, which are newer and larger than the Predators, will soon be able to record video in 10 directions at once. By 2011, that will increase to 30 directions with plans for as many as 65 after that. Even the Air Force's top intelligence official, Lt. Gen. David A. Deptula, says it could soon be "swimming in sensors and drowning in data."

He said the Air Force would have to funnel many of those feeds directly to ground troops to keep from overwhelming its intelligence centers. He said the Air Force was working more closely with field commanders to identify the most important targets, and it was adding 2,500 analysts to help handle the growing volume of data.

With a new $500 million computer system that is being installed now, the Air Force will be able to start using some of the television techniques and to send out automatic alerts when important information comes in, complete with highlight clips and even text and graphics.

"If automation can provide a cue for our people that would make better use of their time, that would help us significantly," said Gen. Norton A. Schwartz, the Air Force's chief of staff.

Officials acknowledge that in many ways, the military is just catching up to features that have long been familiar to users of YouTube and Google.

John R. Peele, a chief in the counterterrorism office at the National Geospatial-Intelligence Agency, which helps the Air Force analyze videos, said the drones "proliferated so quickly, and we didn't have very much experience using them.

"So we're kind of learning as we go along which tools would be helpful," he said.

But Mark A. Bigham, an executive at Raytheon, which designed the new computer system, said the Air Force had actually moved more quickly than most intelligence agencies to create Weblike networks where data could be shared easily among analysts.

In fact, it has relayed drone video to the United States and Europe for analysis for more than a decade. The operations, which now include 4,000 airmen, are headquartered at the base here, where three analysts watch

the live feed from a drone.

One never takes his eyes off the monitor, calling out possible threats to his partners, who immediately pass alerts to the field via computer chat rooms and snap screenshots of the most valuable images.

"It's mostly through the chat rooms — that's how we're fighting these days," said Col. Daniel R. Johnson, who runs the intelligence centers.

He said other analysts, mostly enlisted men and women in their early 20s, studied the hundreds of still images and phone calls captured each day by U-2s and other planes and sent out follow-up reports melding all the data.

Mr. Bigham, the Raytheon executive, said the new system would help speed that process. He said it would also tag basic data, like the geographic coordinates and the chat room discussions, and alert officials throughout the military who might want to call up the videos for further study.

But while the biggest timesaver would be to automatically scan the video for trucks and armed men, that software is not yet reliable. And the military has run into the same problem that the broadcast industry has in trying to pick out football players swarming on a tackle.

So Cmdr. Joseph A. Smith, a Navy officer assigned to the National Geospatial-Intelligence Agency, which sets standards for video intelligence, said he and other officials had climbed into broadcast trucks outside football stadiums to learn how the networks tagged and retrieved highlight film.

"There are these three guys who sit in the back of an ESPN or Fox Sports van, and every time Tom Brady comes on the screen, they tap a button so that Tom Brady is marked," Commander Smith said, referring to the New England Patriots quarterback. Then, to call up the highlights later, he said, "they just type in: 'Tom Brady, touchdown pass.' "

Lt. Col. Brendan M. Harris, who is in charge of an intelligence squadron here, said his analysts could do that. He said the Air Force had just installed telestrators on its latest hand-held video receiver, and harried officers in the field would soon be able to simply circle the images of trucks or individuals they wanted the drones to follow.

But Colonel Harris also said that the drones often shot gray-toned video with infrared cameras that was harder to decipher than color shots. And when force is potentially involved, he said, there will be limits on what automated systems are allowed to do.

"You need somebody who's trained and is accountable in recognizing that that is a woman, that is a child and that is someone who's carrying a weapon," he said. "And the best tools for that are still the eyeball and the human brain."