Important parts of Operation Iraqi Freedom were carried out by remote control.

War From Afar

By Richard J. Newman

USAF photo by MSgt. Deb Smith

War Stars. ***The electronic "take" from Predators and other UAVs was monitored by intelligence experts and others at US bases. Here, a crew at Tallil AB, Iraq, move a Predator into position.***

IN THE first week of Gulf War II, a Marine reconnaissance team near Basra reported it was surrounded by enemy troops and in need of reinforcements. The quickest way in was by helicopter, but the nearby terrain was unfamiliar.

Out went an urgent request for U-2 and Predator surveillance aircraft to scout possible landing zones.

Five thousand miles away, at Langley AFB, Va., USAF Capt. Bob Lyons turned to the task. He and dozens of his colleagues had been set up in 27 chilly trailers lashed together to form a distributed ground station (DGS), which monitored minute details of the war. Lyons started redirecting a U-2 that was already airborne over Iraq. The U-2 got onto the scene and snapped its first pictures a mere 20 minutes after the original call for help.

Intelligence experts at Langley and another base (unnamed here, at Air Force request) quickly analyzed the photos and then transmitted them via satellite to the combined air operations center (CAOC) in Saudi Arabia. There, US planners reviewed the images and began to designate landing zones and prepare for the mission.

A few minutes later, Lyons helped direct a Predator unmanned aerial vehicle to the scene of the action. Specialists looking through the UAV's camera located the Marines and scanned the ground for signs of any Iraqi activity near the potential landing zones. The UAV relayed real-time video to Langley, the CAOC, and several other posts.

The long-distance linkup paid off: Two hours after the first Marine SOS, reinforcements were on their way to the LZs.

Virtual Warriors

Hollywood has long portrayed the American military as all-knowing and capable of spellbinding technological feats. As the troops know, reality is often far less impressive.

However, more than ever before, the front-line troops in Iraq relied on high-tech virtual warriors operating nowhere near the war zone. Hundreds of troops who typically would have deployed to the theater stayed at their home bases in the United States and elsewhere, contributing to the success of the armed action through satellite and computer links, all without adding to the US footprint in the region.

At Langley, the Air Force tasked an entire 1,700-person intelligence group to provide direct, real-time support to US Central Command's intelligence directorate, just as if they were at the CAOC. Other remote-control warriors helped direct U-2s and control Predators as well as the sensors onboard.

Leaving some troops at home yields a clear logistical benefit. "This equip-

ment and manpower does not have to move forward," said Brig. Gen. Kelvin R. Coppock, director of intelligence for Air Combat Command at Langley. That, in turn, reduces the amount of lift, lodging, food, and security forces needed to support troops in the theater.

Decentralizing the network of intelligence support also appears to have helped significantly compress the "kill chain"—that is, shorten the amount of time needed to progress from target detection to target destruction. In Gulf War II, the average amount of time needed to complete the cycle was about 45 minutes—half what was required in the war in Afghanistan only two years ago. And Afghanistan marked a dramatic improvement over the first Persian Gulf War in 1991, when it often took hours or days for targeting data to travel from sensor to shooter.

The Iraq war required significant contributions from about one dozen bases located beyond the theater. Langley was one of the busiest hubs of extra-theater activity. The 27-trailer DGS served as a Stateside nerve center for air war intelligence operations. Inside the warren of trailers, Air Force intelligence experts monitored radio traffic and live video feeds from Predators. Maps of Iraq and downtown Baghdad hung on the walls.

Analysts working 12-hour shifts downloaded and transmitted hundreds of images each day. Other experts regularly re-evaluated the intelligence-surveillance-reconnaissance component of the daily air tasking order to make sure the US was getting the maximum benefit out of available assets.

During each day of combat operations, troops at the DGS helped planners in Saudi Arabia handle about 50 time sensitive targets—fleeting targets like convoys of Iraqi troops or mobile surface-to-air missiles mounted on the backs of trucks.

After spotting such a target, officials at the CAOC typically would contact Langley and ask specialists to punch raw intelligence into a program called ISR Manager. The software tracked all ISR flights and associated targets and could determine which intelligence asset would be able to get to the new target area most quickly and what other intelligence might be lost in the process.

Such rapid processing by computers is often the only way to gather adequate targeting data on fleeting targets before they disappear, yet it doesn't always make sense to drop everything for an uncertain strike opportunity.

"There's no point pulling a higher priority target for a lower one," explained Maj. Larry Mastin, who's helping develop the system's future capabilities at Langley.

While officials still consider the Langley program to be a prototype, they note that, in numerous cases, it helped generate intelligence about targets that might otherwise have vanished before they could be attacked.

USAF photo by SSgt. Lee A. Osberry Jr.

Burn and Bang. ***In one case, a Predator operator in the US used the laser of a UAV to heat up an Iraqi target, which was then hit by an A-10 Warthog (such as this one) with a laser guided bomb.***

USAF photo

A Long Tether. ***Most of the USAF unit that operates the high-flying Global Hawk UAV never left home for Iraqi Freedom. All but a few stayed at US bases, carrying out the operation and analyzing images.***

Something Different

At other times, the quick turnaround time came as a result of months of practice.

Example: SSgt. Brandy Hudson, an imagery analyst, never left Langley. She belonged to a special "airfield assessment team" formed by CENTCOM in December 2002. As part of the team, she spent the weeks preceding the war poring over intelligence relating to Iraqi airfields, the better to move swiftly once the shooting started. Then the war be-

gan. One day, as she scanned a series of images of Iraqi airfields, something leaped out at her. She noticed that the picture contained a structure that had not been on the picture taken five hours earlier. Sure enough, the new item was an Iraqi surface-to-air missile.

Hudson annotated the site and sent her analysis to the theater only about 30 minutes after first seeing the image, and the SAM was destroyed a short while afterward.

The Air Force designed the DGS to be deployable. However, it does not travel. (There are actually two—one at Langley and one on the West Coast.) Moving 27 trailers and all the support gear would take up all of the room on 17 dedicated C-5 transports—aircraft which are already in heavy demand. Moreover, the Air Force would have to transport the 600 specialists who man the DGS.

Since the Iraq war validated ACC's reachback concept, the Air Force is now planning to build permanent facilities for the DGS at Langley. "I can't think of any reason to have them forward," said Coppock.

Analysis and processing aren't the only functions being shipped to the distant rear. In May 2002, Gen. Hal M. Hornburg, the ACC commander, approved the concept of "remote split operations" for Predator units. Ever since the Predator's debut over Bosnia in 1995, the unmanned surveillance airplanes had been operated by units that deployed to the theater. Unlike manned aircraft, however, Predators are "flown" by pilots who give signals to the airplane via satellite links. The pilot controlling the UAV can operate from any facility, as long as the UAV has the capability to communicate through a satellite.

Hornburg's approval of the new concept of operations caused a radical change. When it came time to ship several Predators over to Gulf locations, about half of the aircrews stayed at home bases. It didn't limit their role in the war, however.

You Find, I'll Fire

On one occasion, a Predator camera was scanning US Army supply lines in southern Iraq, keeping an eye out for approaching enemy attackers, when it spotted an Iraqi SAM. The Predator was outfitted with its own laser designator, so the UAV pilot—who was sitting in a command center in the western US—heated up the target. Meanwhile, an A-10 attack aircraft was flying nearby. The A-10 pilot, using the Predator's laser targeting, launched a laser guided weapon and destroyed the SAM. It was one of the first times ever that a pilot outside the combat zone had such a direct role in an attack.

In at least one other case, a Predator pilot who was controlling a UAV from US territory fired a Hellfire missile at a target on Iraqi soil—in its way, one of the longest-ranged strikes ever. Despite the novelty, commanders and war planners seemed quickly comfortable with the setup. "It's not only something that technology has allowed us to do," said Lt. Col. Stewart Kowall, operations officer for the 15th Reconnaissance Squadron at Nellis Air Force Base in Nevada. "We like doing it this way. The only feedback has been positive."

Remote Predator operations produce only modest manpower savings. The airplanes still must be based in the theater, which requires launch-and-recovery teams to handle takeoffs and landings. (The airplane is controlled by on-site airmen until it reaches an altitude of about 1,000 feet, at which point the pilot at the remote ground station takes over via satellite linkup.) Maintenance crews that keep the UAVs humming also have to be in theater. Thus, of the 60 troops usually required for one Predator deployment, about two dozen can now stay at home base. With only four Predators deployed to the Iraqi theater, the US footprint shrunk by just 100 or so.

However, there's another gain from centralizing some of the key people for an aircraft as scarce as the Predator. "The real benefit is the flexibility it provides the combatant commander," said Kowall. The single-engine spyplane is so popular that the Joint Chiefs of Staff routinely turn down requests for Predators from the Pentagon's regional four-star commanders. If Predator pilots and analysts don't always have to deploy, it should be easier to "swing" the Predator from one operation to the next. Ground crews would still have to pack up and move, but Predator operators and analysts at home base should be able to switch seamlessly from one operation to another on virtually no notice.

Remote operations also give the troops a break. Predators are in such high demand that their crews have been deploying at rates that are among the highest in the Air Force. When the troops do their job from the home base, said Kowall, "we still consider them deployed." The hours are the same as if they were in the war zone—24/7, usually split into two 12-hour shifts—and the pace of the operation thousands of miles away dictates the schedule. But there are ob-

USAF photo by SSgt. Chris Flahive

To the Front. ***UAVs still need professional maintenance at either end of the deployment. Here, airmen of the 757th Air Maintenance Expeditionary Squadron prime a Predator to go overseas.***

Staff photo by Guy Aceto

vious differences. "At the end of the duty day," said Col. Charlie Lyon, commander of the 57th Operations Group at Nellis, "you walk out of the deployment and walk back into the rest of life in America."

Quiet: Warriors at Work

It is also true, though, that since airmen are much more accessible to their families, commanders have to take steps to prevent broken appliances and school problems and other home issues from disrupting the "battle rhythm." Personal calls to the control room, for instance, aren't allowed.

USAF gives high priority to making better use of highly trained UAV specialists such as pilots and imagery analysts. Most of the analysis of U-2 imagery during the Iraq war was handled back in the States, some of it outsourced to reservists.

The unit that operates the high-altitude Global Hawk UAV changed tactics, too. During the war in Afghanistan two years ago, the whole unit deployed to Pakistan. During Gulf War II much of the team stayed home, spending more time doing their core jobs instead of packing and unpacking bags and coping with the often harsh conditions of overseas bases.

Even with better use of the manpower, however, there were shortages. The Global Hawk that flew over Iraq, for instance, was capable of taking thousands of pictures a day, but it only took hundreds, because there weren't enough analysts on the ground to sort through any more than that.

The experience of Gulf War II seems to have satisfied operators who worried about whether long-distance intelligence support would actually arrive when it was needed. Inadequate intelligence has long been a constraining factor in air campaigns. Often, it's too slow to arrive or incomplete. Iraq seemed to have signaled a turning point. While some intelligence was notoriously tough to get—the whereabouts of Saddam Hussein and his senior deputies is a good example—there were other occasions in which there was a surfeit of information.

"On many occasions," said Coppock, "we had the data but no strikers."

During the encounter with the Iraqi Republican Guard's Medina Division in late March, for instance, the targeting data flowed in so fast that crowded airspace—not intelligence shortfalls—became the factor that held back the pace of the attack.

Successes of the type seen in Gulf War II should pave the way for even more remote operations. Experimenters at Langley are developing increasingly sophisticated software and other tools that would automate imagery analysis and other time-consuming tasks, further speeding support from the distant rear. Planners envision a day when the Air Force will be able to run an entire air operations center—and thus a complete air war—from the United States. Hollywood might have trouble keeping up. ■

Photo by Paul Kennedy

Joystick Warriors. ***At top, a Predator flies high above Indian Springs AFAF, Nev. It is controlled by professionals such as these two airmen ensconced in a distant command center.***

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