At Indian Springs, Nev., ground-based aircrews and their aircraft prepare to play their parts in modern combat.

Eyes of the Warrior

Photography by Guy Aceto, Art Director, **and Paul Kennedy**

A Predator Unmanned Aerial Vehicle comes in over the Nevada desert for a landing.

The Predator UAV is not yet officially operational, but it is battle tested. It flew reconnaissance missions over Kosovo in 1999 for Operation Allied Force, but it became a star in Afghanistan during Operation Enduring Freedom. Teams operating the Predator were among the first troops sent to the theater last fall.

The focal point for the Air Force's Predators is Indian Springs Air Force Auxiliary Field, about 40 miles northwest of Las Vegas. It is home base for the 11th, 15th, and 17th Reconnaissance Squadrons.

At right, a Predator comes in for a touch-and-go at Indian Springs.

Staff photos by Guy Aceto

The 11th RS, the first Predator squadron, was activated at Nellis AFB, Nev., in 1995. Its members now train other Predator aircrews and participate in deployments themselves.

The 15th RS began operating as a Predator unit in 1997. The newest unit, the 17th RS, was activated in March, largely because of the success of the Predator in Afghanistan. Mission requirements have greatly increased.

A Predator system, designated RQ-1, typically comprises four air vehicles, a Ground Control Station, and a Trojan Spirit II satellite communications suite. For 24-hour operation, each system has about 55 controllers, maintainers, and intelligence personnel.

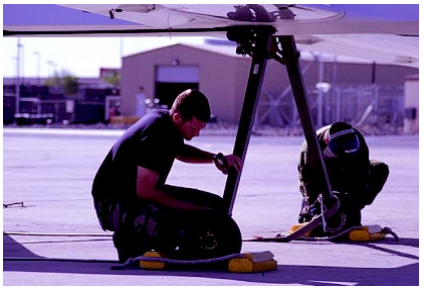
At right, a ground crew prepares an RQ-1A for a mission. The RQ-1A vehicle is 27 feet long and has a wing span of about 48 feet. It weighs 950 pounds empty (gross weight 2,250 pounds) and can carry a 450-pound payload. Its ceiling is 25,000 feet.

Staff photos by Guy Aceto

"Welcome the next generation," Gen. John P. Jumper, USAF Chief of Staff, said of the follow-on Predator—the RQ-1B. "It will do what we're able to do today, much, much better." The RQ-1B is distinguished by a blade antenna on its spine, as opposed to the bulge on the RQ-1A. The newer model flies faster and higher, with a ceiling of 45,000 feet, and has more sensor payload capacity.

At right, an RQ-1A vehicle is tied down with heavy straps during an engine run up. A crew chief with a fire extinguisher stands by.

Photos by Paul Kennedy



At far left, the ground crew removes the straps, and, once the pre-flight checklist is complete, the aircraft is ready to launch.

The Predator first flew on July 3, 1994, less than six months after General Atomics Aeronautical Systems of San Diego received its first contract for 10 aircraft.

Photos by Paul Kennedy

At left, aircrew members gain experience using a mission task trainer, a nearly exact copy of the operational control unit.

Predator pilots, who come from manned aircraft systems, control takeoffs and landings of the UAV. The pilot flies with a keyboard, throttle button, joystick, and brake pedals under the console. Once airborne, though, the Predator basically flies itself using a pre-programmed flight path to reach its station and maintain orbit. If the UAV needs to fly to a different location, the pilot can retake command and fly the vehicle to its new orbit location.

The aircrew and sensor crews both operate from the Ground Control Station. The GCS is housed in what looks like a camouflaged shipping container. The system's 20-foot-diameter satellite dish connects the GCS and the UAV when it is beyond line-of-sight range and also disseminates intelligence.

Staff photos by Guy Aceto

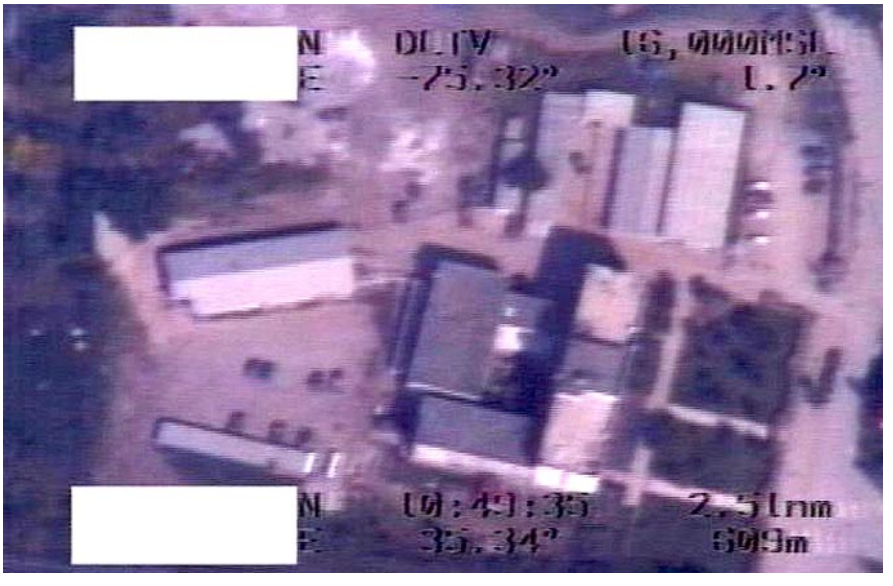
Photos by Paul Kennedy

On deployments, Predator crews use transportable, fabric aircraft shelters, such as this one at Indian Springs.

In Allied Force, Predators provided data used by airborne forward air controllers to find targets. They have also flown reconnaissance missions for Southern Watch, the no-fly zone operation over southern Iraq.

In cubicles inside the 30-foot-long GCS van, screens display a map of where the Predator is flying and what its cameras see.

Photos by Paul Kennedy



At left and below are typical RQ-1A images. The UAV has a nose-mounted color camera, generally used by the pilot for flight control, a day variable aperture TV camera, and a variable aperture infrared camera, for low light and night. A synthetic aperture radar enables it to "see" through clouds, smoke, or haze and produces still-frame radar images. The sensors are carried on the same airframe but cannot be operated simultaneously.

The Air Force plans to include the Multispectral Targeting System with inherent Hellfire missile targeting capability and to integrate the sensors and laser designator and laser illuminator into a single package.

Although its sensors are not as powerful as those on satellites or U-2 reconnaissance aircraft, Predator can identify vehicles as small as tanks.

During Enduring Freedom, RQ-1s provided live video transmissions of target images to USAF AC-130 gunships. As the Chief of Staff explained, "When the AC-130 arrived on station, it was able to go right to work."

At right and below, a team from the 11th and 15th is reassembling an RQ-1B that they had taken apart. In the process of reassembling the UAV, they are validating a checklist for an air vehicle, whose strengths and limitations are still to be determined.

Real world operations have shown some shortcomings, such as wing icing and occasional dropped communications links.

Photos by Paul Kennedy

According to Air Force officials, the biggest challenge facing Predator units is demand for their services. The RQ-1 squadrons already have found it difficult to keep deployments from exceeding 90 days. Most squadron members have deployed more than once in the past year.

The 17th RS is scheduled to be fully mission capable by 2005, but initially it pulled assets from the 11th and 15th RSs.

USAF intends to expand the role of the Predator from reconnaissance only to include weapons delivery, too.

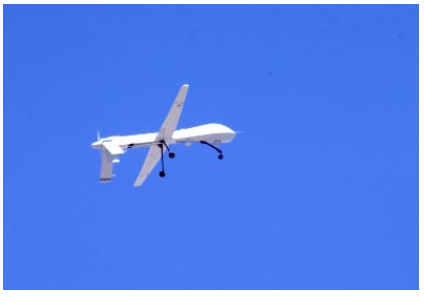
The Air Force began test-launching Hellfire laser-guided missiles from the Predator last year. The CIA employed Hellfire-carrying Predators in Afghanistan. USAF plans to dedicate the RQ-1B to the hunter–killer role. According to Jumper, it will carry four or six weapons.

At right, a truck tows a Predator to the flight line.

Photos by Paul Kennedy

The RQ-1 system can be broken apart into six main components and loaded into what the crews term "coffins" for rapid deployment worldwide. The GCS is the largest component, and it can be rolled onto a C-130.

The Air Force requested $154 million in Fiscal 2003 to purchase 22 new Predator systems. Plans also call for using advanced communications to link the Predator with other aircraft and ground stations so it can deliver its visual and electronic goods and receive orders in return.



Staff photos by Guy Aceto

The Bush Administration sees the UAV as a leading transformational system. There can be little doubt that the workload for Predator crews will continue to increase. ■