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Drone Crash in Iran Reveals Secret U.S. Surveillance Effort

By SCOTT SHANE and DAVID E. SANGER

WASHINGTON — The stealth C.I.A. drone that crashed deep inside Iranian territory last week was part of a stepped-up surveillance program that has frequently sent the United States' most hard-to-detect drone into the country to map suspected nuclear sites, according to foreign officials and American experts who have been briefed on the effort.

Until this week, the high-altitude flights from bases in Afghanistan were among the most secret of many intelligence-collection efforts against Iran, and American officials refuse to discuss it. But the crash of the vehicle, which Iranian officials said occurred more than 140 miles from the border with Afghanistan, blew the program's cover.

The overflights by the bat-winged RQ-170 Sentinel, built by Lockheed Martin and first glimpsed on an airfield in Kandahar, Afghanistan, in 2009, are part of an increasingly aggressive intelligence collection program aimed at Iran, current and former officials say. The urgency of the effort has been underscored by a recent public debate in Israel about whether time is running out for a military strike to slow Iran's progress toward a nuclear weapon.

In a recent speech, President Obama's national security adviser, Tom Donilon, hinted at secret efforts by the United States to keep watch on Iran's nuclear program.

"We will continue to be vigilant," Mr. Donilon said last month at the Brookings Institution. "We will work aggressively to detect any new nuclear-related efforts by Iran. We will expose them and force Iran to place them under international inspections."

Iran said over the weekend that it had recovered the RQ-170, the same drone deployed over Osama bin Laden's compound before he was killed in May. Senior intelligence officials were disturbed that the drone was publicly discussed in the coverage of the Bin Laden raid, in part because of the fear of exposing its use over Iran.

A statement Sunday from the American-led International Security Assistance Force in Afghanistan said Iran might have recovered an “unarmed reconnaissance aircraft” lost while “flying a mission over western Afghanistan.” But several experts noted that the stealth technology of the RQ-170 — which greatly reduces the chances that the drone can be detected by radar — had little use in western Afghanistan, because the Taliban have no radar to detect flights.

Iranian officials have said that the aircraft was detected near the town of Kashmar, 140 miles from the Afghan border, and that it was shot down or crashed because its control systems were hacked by the Iranian military. American officials say that those stories are fanciful, and that the drone was lost because of a malfunction.

Either way, the centerpiece of what had been a covert program is now in the hands of Iranian forces, which may share the captured technology with other countries. There are differing accounts of the extent of the damage to the craft; Iran has not published photographs of the wreckage, though officials have said video of the drone may soon be broadcast on television.

Two officials said that the United States briefly considered going in to retrieve the downed drone, or to destroy it, as first reported Wednesday by The Wall Street Journal, but the operation was deemed too risky. There are questions about whether Iran could reverse-engineer the technology, though they certainly could sell the vehicle to China, Russia or other countries with a deep interest in it.

“The flights from Moscow and Beijing to Tehran were probably quite full the last few days,” said P. W. Singer, who studies military robotics at the Brookings Institution.

Mr. Singer said that the most sought-after technology on the craft is probably its array of sensors, which may include sophisticated radar that is more advanced than anything Russia or China use currently.

Dennis M. Gormley, a missile and drone expert at the University of Pittsburgh, said reverse-engineering the aircraft itself would be difficult even for a sophisticated military. “Unless somebody put the engineering drawings in the U.A.V.,” he said, using the abbreviation for unmanned aerial vehicle, “it won’t be easy. In any complex piece of aviation equipment, you have to replicate the tolerances precisely.”

In Abbottabad, Pakistan, the RQ-170 was used to model the Bin Laden compound. In Iran, among other missions, it is looking for tunnels, underground facilities or other places where Iran could be building centrifuge parts or enrichment facilities.

One such site, outside Qum, was revealed by President Obama and the leaders of France and Britain in 2009, though it appears that Israel played a major role in detecting that site. One senior official said recently that "we've got nothing of that scale yet," but added "we are looking every day."

Surveillance of Iran is nothing new: American satellites have been trained on its nuclear facilities, their missile bases and their defenses for many years. But the RQ-170 Sentinel, which can fly at an altitude of 50,000 feet, is considered vital to the effort.

While an orbiting surveillance satellite can observe a location for only a few minutes at a time, a drone can loiter for hours, sending a video feed as people move about the site. Such a "pattern of life," as it is called, can give crucial clues to the nature of the work being done, the equipment used and the size of the work force.

"It's basically like staking out a Mafia social club," said John Pike, who tracks military technology at the Web site GlobalSecurity.org. "If I'm just looking at brick-and-mortar targets, satellite's fine. But if I want to see what people are doing all day, the drone is a whole lot better."

In addition to video cameras, independent experts say the drone almost certainly carries communications intercept equipment and sensors that can detect tiny amounts of radioactive isotopes and other chemicals that can give away nuclear research.

News reports in South Korea in 2009 said the United States planned to base the RQ-170 drone there to fly surveillance missions over North Korea, whose nuclear and missile programs are a top American intelligence target.

Scott Shane reported from Washington, and David E. Sanger from Boston.