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American fighter jets screamed over the Iraqi countryside heading for the MQ-1 Predator drone, while its crew in California stood by helplessly. What had begun as an ordinary reconnaissance mission was now taking a ruinous turn. In an instant, the jets attacked and then it was all over. The Predator, one of the Air Force's workhorse hunter/killer robots, had been obliterated.

An account of the spectacular end of that nearly \$4 million drone in November 2007 is contained in a collection of Air Force accident investigation documents recently examined by TomDispatch. They catalog more than 70 catastrophic Air Force drone mishaps since 2000, each resulting in the loss of an aircraft or property damage of \$2 million or more.

These official reports, some obtained by TomDispatch through the Freedom of Information Act, offer new insights into a largely covert, yet highly touted war-fighting, assassination, and spy program involving armed robots that are significantly less reliable than previously acknowledged. These planes, the latest wonder weapons in the U.S. military arsenal, are tested, launched, and piloted from a shadowy network of more than [60 bases spread around the globe](#), often in [elite support of teams of special operations forces](#).

Collectively, the Air Force documents offer a remarkable portrait of modern drone warfare, one rarely found in a decade of generally [triumphalist or awestruck press accounts](#) that seldom mention the [limitations](#) of drones, much less their [mission failures](#).

The aerial disasters described draw attention not only to the technical limitations of drone warfare, but to larger conceptual flaws inherent in such operations. Launched and landed by

aircrews close to battlefields in places like Afghanistan, the drones are controlled during missions by pilots and sensor operators -- often multiple teams over many hours -- from bases in places like Nevada and North Dakota. They are sometimes also monitored by “screeners” from private security contractors at stateside bases like Hurlburt Field in Florida. (A recent McClatchy report [revealed](#) that it takes nearly 170 people to keep a single Predator in the air for 24 hours.)

In other words, drone missions, like the robots themselves, have many moving parts and much, it turns out, can and does go wrong. In that November 2007 Predator incident in Iraq, for instance, an electronic failure caused the robotic aircraft to engage its self-destruct mechanism and crash, after which U.S. jets destroyed the wreckage to prevent it from falling into enemy hands. In other cases, drones -- officially known as remotely piloted aircraft, or RPAs -- broke down, escaped human control and oversight, or self-destructed for reasons ranging from pilot error and bad weather to mechanical failure in Afghanistan, Djibouti, the Gulf of Aden, Iraq, Kuwait, and various other unspecified or classified foreign locations, as well as in the United States.

In 2001, Air Force Predator drones flew 7,500 hours. By the close of last year, that number topped 70,000. As the [tempo](#) of robotic air operations has steadily increased, crashes have, not surprisingly, become more frequent. In 2001, just two Air Force drones were destroyed in accidents. In 2008, eight drones fell from the sky. Last year, the number reached 13. ([Accident rates](#) are, however, dropping according to an Air Force report relying on figures from 2009.)

Keep in mind that the 70-plus accidents recorded in those Air Force documents represent only drone crashes investigated by the Air Force under a rigid set of rules. Many other drone mishaps have not been included in the Air Force statistics. Examples include a [haywire MQ-9 Reaper](#) drone that had to be shot out of the Afghan skies by a fighter jet in 2009, a remotely-operated Navy helicopter that went down in Libya last June, an unmanned aerial vehicle whose camera was reportedly taken by Afghan insurgents after a crash in August 2011, an advanced [RQ-170 Sentinel](#) lost during a spy mission in Iran last December, and the [recent crash](#) of an MQ-9 Reaper in the Seychelles Islands.

### You Don't Need a Weatherman... Or Do You?

How missions are carried out -- and sometimes fail -- is apparent from the declassified reports, including one provided to TomDispatch by the Air Force detailing a June 2011 crash. Late that month, a Predator drone took off from Jalalabad Air Base in Afghanistan to carry out a surveillance mission in support of ground forces. Piloted by a member of the 432nd Air Expeditionary Wing out of Whiteman Air Force Base in Missouri, the robotic craft ran into rough weather, causing the pilot to ask for permission to abandon the troops below.

His commander never had a chance to respond. Lacking weather avoidance equipment found on more sophisticated aircraft or on-board sensors to clue the pilot in to rapidly deteriorating weather conditions, and with a sandstorm interfering with ground radar, "severe weather effects" overtook the Predator. In an instant, the satellite link between pilot and plane was severed. When it momentarily flickered back to life, the crew could see that the drone was in an extreme nosedive. They then lost the datalink for a second and final time. A few minutes later, troops on the ground radioed in to say that the \$4 million drone had crashed near them.

A month earlier, a Predator drone took off from the tiny African nation of Djibouti in support of Operation Enduring Freedom, which includes [operations](#) in Afghanistan as well as Yemen, Djibouti, and Somalia, among other nations. According to documents obtained via the Freedom of Information Act, about eight hours into the flight, the mission crew noticed a slow oil leak. Ten hours later, they handed the drone off to a local aircrew whose assignment was to land it at Djibouti's Ambouli Airport, a joint civilian/military facility adjacent to Camp Lemonier, a U.S. base in the country.

That mission crew -- both the pilot and sensor operator -- had been deployed from Creech Air Force Base in Nevada and had logged a combined 1,700 hours flying Predators. They were considered "experienced" by the Air Force. On this day, however, the electronic sensors that measure their drone's altitude were inaccurate, while low clouds and high humidity affected its infrared sensors and set the stage for disaster.

An investigation eventually found that, had the crew performed proper instrument cross-checks, they would have noticed a 300-400 foot discrepancy in their altitude. Instead, only when the RPA broke through the clouds did the sensor operator realize just how close to the ground it was. Six seconds later, the drone crashed to earth, destroying itself and one of its Hellfire missiles.

Storms, clouds, humidity, and human error aren't the only natural dangers for drones. In a November 2008 incident, a mission crew at [Kandahar Air Field](#) launched a Predator on a windy day. Just five minutes into the flight, with the aircraft still above the sprawling American mega-base, the pilot realized that the plane had already deviated from its intended course. To get it back on track, he initiated a turn that -- due to the aggressive nature of the maneuver, wind conditions, drone design, and the unbalanced weight of a missile on just one wing -- sent the plane into a roll. Despite the pilot's best efforts, the craft entered a tailspin, crashed on the base, and burst into flames.

### Going Rogue

On occasion, RPAs have simply escaped from human control. Over the course of eight hours on a late February day in 2009, for example, five different crews passed off the controls of a Predator drone, one to the next, as it flew over Iraq. Suddenly, without warning, the last of them, members of the North Dakota Air National Guard at Hector International Airport in Fargo, lost communication with the plane. At that point no one -- not the pilot, nor the sensor operator, nor a local mission crew -- knew where the drone was or what it was doing. Neither transmitting nor receiving data or commands, it had, in effect, gone rogue. Only later was it determined that a datalink failure had triggered the drone's self-destruct mechanism, sending it into an unrecoverable tailspin and crash within 10 minutes of escaping human control.

In November 2009, a Predator launched from Kandahar Air Field in Afghanistan lost touch with its human handlers 20 minutes after takeoff and simply disappeared. When the mission crew was unable to raise the drone, datalink specialists were brought in but failed to find the errant plane. Meanwhile, air traffic controllers, who had lost the plane on radar, could not even locate its transponder signal. Numerous efforts to make contact failed. Two days later, at the moment the drone would have run out of fuel, the Air Force declared the Predator "lost." It took eight days for its wreckage to be located.

### Crash Course

In mid-August 2004, while drone operations in the Central Command (CENTCOM) area of responsibility were running at high tempo, a Predator mission crew began hearing a cascade of warning alarms indicating engine and alternator failure, as well as a possible engine fire. When the sensor operator used his camera to scan the aircraft, it didn't take long to spot the problem. Its tail had burst into flames. Shortly afterward, it became uncontrollable and

crashed.

In January 2007, a Predator drone was flying somewhere in the CENTCOM region (above one of 20 countries in the Greater Middle East). About 14 hours into a 20-hour mission, the aircraft began to falter. For 15 minutes its engine was failing, but the information it was sending back remained within normal parameters, so the mission crew failed to notice. Only at the last minute did they become aware that their drone was dying. As an investigation later determined, an expanding crack in the drone's crankshaft caused the engine to seize up. The pilot put the aircraft into a glide toward an unpopulated area. Higher headquarters then directed that he should intentionally crash it, since a rapid reaction force would not be able to reach it quickly and it was carrying two Hellfire missiles as well as unspecified "classified equipment." Days later, its remains were recovered.

### The Crash and Burn Future of Robot Warfare

In spite of all the technical limitations of remote-controlled war spelled out in the Air Force investigation files, the U.S. is doubling down on drones. Under the president's [new military strategy](#), the Air Force is projected to see its share of the budgetary pie rise and flying robots are [expected](#) to be a major part of that expansion.

Already, counting the Army's thousands of tiny drones, one in three military aircraft -- [close to 7,500 machines](#) -- are robots. According to official figures provided to TomDispatch, roughly 285 of them are Air Force Predator, Reaper, or Global Hawk drones. The Air Force's arsenal also includes more advanced [Sentinels](#), [Avengers](#), and other classified unmanned aircraft.

A report published by the Congressional Budget Office last year, revealed that "the Department of Defense plans to purchase about 730 new medium-sized and large unmanned aircraft systems" during the next 10 years.

Over the last decade, the United States has increasingly turned to drones in an effort to win its

wars. The Air Force investigation files examined by TomDispatch suggest a more extensive use of drones in Iraq than has previously been reported. But in Iraq, as in Afghanistan, America's preeminent wonder weapon failed to bring the U.S. mission anywhere close to victory. Effective as the spearhead of a program to [cripple](#) al-Qaeda in Pakistan, drone warfare in that country's tribal borderlands has also

[alienated](#)

almost the entire population of

[190 million](#)

. In other words, an estimated 2,000

[suspected or identified guerrillas](#)

(as well as untold numbers of civilians) died. The populace of a key American ally grew ever more hostile and no one knows how many new militants in search of revenge the drone strikes may have

[created](#)

, though the numbers are believed to be

[significant](#)

Despite a decade of technological, tactical, and strategic refinements and improvements, Air Force and allied CIA personnel watching computer monitors in distant locations have [continually](#) failed to discriminate between armed combatants and innocent civilians and, as a result, the judge-jury-executioner drone assassination program is widely considered to have run afoul of international law.

In addition, drone warfare seems to be creating a sinister system of embedded economic incentives that may lead to increasing casualty figures on the ground. "In some targeting programs, staffers have review quotas -- that is, they must review a certain number of possible targets per given length of time," *The Atlantic's* Joshua Foust [recently wrote](#) of the private contractors involved in the process. "Because they are contractors," he explains, "their continued employment depends on their ability to satisfy the stated performance metrics. So they have a financial incentive to make life-or-death decisions about possible kill targets just to stay employed. This should be an intolerable situation, but because the system lacks transparency or outside review it is almost impossible to monitor or alter."

As flight hours rise year by year, these stark drawbacks are compounded by a series of technical glitches and vulnerabilities that are ever more regularly coming to light. These include: Iraqi insurgents hacking drone video feeds, a virulent computer virus infecting the Air Force's unmanned fleet, large percentages of drone pilots [suffering](#) from "high operational stress," a [friendly fire](#)

incident in which drone operators killed two U.S. military personnel, increasing numbers of crashes, and the possibility of an Iranian

[drone-hijacking](#)

, as well as those more than 70 catastrophic mishaps detailed in Air Force accident investigation documents.

Over the last decade, a more-is-better mentality has led to [increased numbers](#) of drones, [dro](#)  
[ne bases](#)

, drone pilots, and drone victims, but not much else. Drones may be effective in terms of generating body counts, but they appear to be even more successful in generating animosity and creating enemies.

The Air Force's accident reports are replete with evidence of the flaws inherent in drone technology, and there can be little doubt that, in the future, ever more will come to light. A decade's worth of [futility](#) suggests that drone warfare itself may already be crashing and burning, yet it seems destined that the skies will fill with drones and that the future will bring more of the same.