Killer Drones Converge on California, Ready to Take Off

By David Axe ✉ December 21, 2010 | 11:00 am | Categories: Drones

Five years ago, the Pentagon was on cusp of an air-combat revolution. For a few brief, heady months in late 2005, it looked like the U.S. military might soon launch full-scale development of a new class of fast, lethal Unmanned Aerial Vehicles eventually capable of replacing all kinds of fighter jets, from the older F-15s, F-16s and F-18s to the latest F-22s.

But the revolution fizzled when the Air Force abandoned its share of the so-called Joint Unmanned Combat Air System effort. Manned jets continued to dominate, culminating in today's mammoth, $300-billion F-35 program.

The embers of upheaval kept burning, almost invisibly. The technology from the 2005 effort survived in various forms, slowly maturing amid a growing demand for combat UAVs. Today, no fewer than three separate killer drone designs — two of them direct descendants of the original J-UCAS demonstrators — have converged on two airfields in California for flight tests.

The revolution flared up again without many people noticing. While the F-35 still gobbles up the bulk of the Pentagon's fighter funding, jet-powered killer drones are back — and revolution is once again a real prospect.

High-endurance armed drones such as the General Atomics Predator have been a fixture of U.S. military operations since the mid-1990s air war over the Balkans. Besides being cheaper to buy and operate, robot aircraft carry fuel in place of a pilot and so can stay in the air longer.

Plus, if they crash or get shot down, nobody gets hurt. That means the military can assign drones to what a robot-industry insider from Boeing called the "worst down-and-dirty missions that even the nuttiest pilot wouldn't want to do."

But today's drones are "fair-weather" killers, too slow to survive the sophisticated air defenses of, say, China or Iran. To bring the advantages of robot aircraft to high-intensity warfare, the Defense Advanced Research Projects Agency along with the Air Force and Navy sponsored J-UCAS starting in 2003. Boeing's X-45 (pictured) competed with the Northrop Grumman-built X-47 to "demonstrate the technical feasibility, military utility and operational value for a networked system of high performance, weaponized unmanned air vehicles," according to Darpa.

By 2005, the J-UCAS program had sent its prototypes on mock bombing runs and proved the drones could develop their own tactics on the fly. The "Common Operating System" meant to control the speedy, lethal bots was particularly promising, and with it J-UCAS even threatened to upstage the $300-billion F-35 manned-fighter program. The new drones were "on the cusp of making history in the aviation world," said the insider.

Then in 2006, the axe fell. The Air Force withdrew from the program. Officially, the Air Force wanted to shift its focus and cash to the new, manned (and ultimately short-lived) "2018 bomber."

There were concerns that algorithms might not be trustworthy to make combat decisions, quite yet. Unofficially, the move away from J-UCAS might have reflected concerns among the Air Force's top brass that the new killer drone could hasten the demise of the traditional fighter pilot.

In any event, without the Air Force J-UCAS collapsed. The Navy continued funding the X-47 for a modest series of tests. The original X-45 ended up an exhibit in the Smithsonian's Air and Space Museum, never to fly again.

Or so observers believed. In fact, Boeing had secretly continued work on a new version of the X-45, apparently believing the Air Force would come back around to the idea of fighter-style killer drones. Meanwhile, a high-profile think piece co-written by future Navy undersecretary Bob Work (.pdf) helped persuade the Navy to raise its expectations for the X-47. Sensing a new momentum for armed UAVs, General Atomics spent its own money to develop a bigger, jet-powered cousin of the Predator called the Avenger.

In the summer of 2009, the Air Force published a "road map" showing how robots might replace nearly every kind of manned aircraft in today's arsenal. Just a few months later, the air branch lifted the (patchy) veil of secrecy surrounding its fighter-like MQ-170 spy drone, built by Lockheed Martin.

The stage has been set for an unofficial revival of J-UCAS. There are no official requirements for a new fighter drone — yet. But the Pentagon is obviously very, very interested.

As is often the case, the drama is taking place in California. Northrop's X-47 is at the Navy's China Lake base in the Mojave Desert, running ground tests prior to a planned first flight "before the end of the year."

Not to be outdone by its former J-UCAS rival, Boeing two weeks ago bolted the new-and-improved X-45 to the back of a 747 for a ride from St. Louis to the Golden State's Edwards Air Force Base, where the bot will have its first flight early next year. General Atomics beat both of the bigger companies into the air: The Avenger has racked up scores of test flights at Edwards since 2009.

Years ago, one analyst called J-UCAS "the worst-funded good idea in decades." There's still not a lot of government money behind the current revival: The Navy has allocated around a billion dollars for X-47 tests. The X-45 and the Avenger are both company-funded efforts.

But the *idea* is as good as ever. And with the impending first flights of the X-45 and X-47, killer drones are about to get a second shot at transforming aerial warfare.

Danger Room will be there, every step of the way.

Photo: Boeing

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Tags: Air Force, Avenger, Darpa, Drones, Navy, X-45, X-47
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Comments (18)

Posted by: libarato | 12/21/10 | 11:23 am |

Wow great! More weapons of war… well done America, the land of the free!

Posted by: steve_real | 12/21/10 | 11:34 am |

Cool stuff!
Romantic ideas of pilots in white scarves are nice,
but total air domination of the battle space is better.
.
The US Military needs to have a toe for toe, blow for blow,
let me know if you can take death row competition
of robots versus man pilots.
The so-called "Top Gun/Red Flag" of the future of robots versus man needs to move forward by all means necessary.
This 'culture of stupidity' is being advocated
by some of our politikal decision makers and military romantics.
These cats need to get back on the team if they really want to win.
In the age of budget cutbacks
I fail to understand their major malfunction?

Posted by: fsimkin | 12/21/10 | 11:52 am |

This is ultimately a story of mavericks within the system keeping a good idea alive in the face of intransigence and stupidity. It repeats the story of early aviation in the military and I have to believe that in spite of "no pilot in the loop" Billy Mitchell is smiling somewhere (ironic though that it is the Navy that kept thing alive this time).

It is (IMHO) a good thing that the program has been underfunded and forced to be creative the past would indicate that is when some of the best ideas flourish.

As someone who build AI systems (albeit for industry not the military) I agree that there are still issues both qualitatively and ethically with autonomous systems and they need to be confronted. But we need to face the issue and find a solution.

Posted by: evab | 12/21/10 | 12:13 pm |

"But today's drones are "fair-weather" killers, too slow to survive the sophisticated air defenses of, say, China or Iran" But the Company and Creech, NV pilots and techs are brave, sexy, macho, strong men of Steel.

Posted by: glh13 | 12/21/10 | 12:55 pm |

@libarato

That's exactly how we have managed to stay the land of the free

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Posted by: jaymoney | 12/21/10 | 12:59 pm |

In all honesty this is the direction things are going. Drones are cheaper to make than conventional aircraft and they can be piloted remotely by anybody. Eventually drones will be able to out-perform conventional aircraft,

as drones do not require G-suits, food, or bathroom breaks.

Posted by: EmergingIdeas | 12/21/10 | 1:40 pm |

Change the color of the "eye" to red, give it some lateral movement, add a buzzing tone and you've got a Cylon … nothing to worry about with that at all …

Posted by: joeblow | 12/21/10 | 2:59 pm |

wtf with the sinister cylon glow light?

Posted by: technophile | 12/21/10 | 3:24 pm |

NOT a good idea. The reason the US is falling behind China is that we waste our money on the military-industrial complex while China flies by on manufacturing and clean-tech. Yes, whiz-bang fighter jets are cool. But right now we are fighting China economically and losing. Put the billion dollars into useful research.

Posted by: WhatAWaste | 12/21/10 | 3:46 pm |

@technofile
I disagree with your reason for the US 'falling behind' China. People unwilling to work in slave like conditions for ~$250/month are probably more to blame than our love for things that go boom.

Posted by: cheetonian | 12/21/10 | 3:57 pm |

Didn't these people watch Macross Plus? Bad idea guys, BAD IDEA!

Posted by: technophile | 12/21/10 | 4:58 pm |

@WhatAWaste: Unless we want US wages to drop to $250 a month, we need to invest in our infrastructure, our workers and our technology so that we can still compete. Here we have $1 billion being spent on testing a unmanned drone prototype. For comparison, total US nonclassified government funding for computing research is $4.3 billion/year. (See http://bits.blogs.nytimes.com/2010/12/21/smarter-not-faster-is-the-future-of-computing-research/ .) The National Science Foundation's budget is $7 billion, and this covers most government research (including on computing) outside of health care. One drone test is a substantial fraction of all our research. The $300 billion F-35 manned-fighter program dwarfs it. Where are our priorities? China is killing us *today* in this economic war.

Posted by: Nightshade | 12/21/10 | 6:38 pm |

@technophile – Not that I disagree, but your numbers aren't apples to apples. JSF R&D has cost something like $5B per year on average since it became a program of record – the $300B you quote is total expenditure (which includes procuring about 2000 aircraft) over more than a decade.
Also "The National Science Foundation's budget is $7 billion, and this covers most government research (including on computing) outside of health care." – I guess it depends on what you define as "most" and "research" since you aren't including the DoE or NASA budgets here, for instance.
At least a large portion of defense dollars are kept in this country…

Posted by: wlblaney | 12/21/10 | 7:13 pm |

I, for one, welcome our Killer Drone Overlords!

Posted by: wiredcom | 12/21/10 | 7:17 pm |

Sorry, California, the killer drones are from Missouri.

Posted by: Cantankerous | 12/22/10 | 8:38 am |

@glh13 Costa Rica may have something to say about that.

Posted by: CptFreakout | 12/22/10 | 4:29 pm |

Russia spent billions on an whizzbang military and nothing in civilian business consumer goods , our manufacturing flew the coop and our schools are an overpriced joke the government ran the economy and look what happened Wall street ran the economy here and look what happened.
We need to concentrate on real education if we are going to compete in the long run and a real industrial base along with that if we are going to survive as an entity.

Posted by: lazyeight | 12/23/10 | 10:38 am |

@evab: Hey ShaJ! How you been doin, 'mano?
