

F-35: the last manned fighter?

It is the most expensive military project ever. It is plagued by delays and menaced by budget cuts. Will the F-35 survive?

The plane is expected to come into service six years late (in 2016) and wildly over-budget. The Pentagon still plans to buy 2,443 F-35s over the next 25 years, at a cost of \$382 billion. But in a parting shot, Mr Gates - US Defence Secretary - gave warning that although he did not think the F-35 faced cancellation, "the size of the buy" might have to be cut.

After beating a Boeing design that was deemed technically riskier, Lockheed Martin signed the contract with the Department of Defence to develop the F-35 in 2001. It was an ambitious undertaking. The aim was to reap huge efficiency gains by replacing nearly all of America's ageing tactical aircraft (the air force's F-16s and A-10s; the navy's A/F-18s and the marines' AV8B jump jets) with three variants of one basic design. There would be a conventional take-off and landing (CTOL) version for the air force, a short take-off and vertical landing (STOVL) version for the marines and a beefier carrier version for the navy. With radar-beating stealth capability and a suite of advanced software and sensors, the F-35 would be a "fifth generation" fighter, far more effective in both its primary ground-attack role and air defence than "legacy" aircraft. (Respectively eight times and four times better, say Lockheed Martin executives, though by what measure is anyone's guess.)

In January this year Mr Gates made a series of further announcements which included spending another \$4.6 billion on development, slowing down initial production to avoid building aircraft that would later have to be expensively upgraded and putting the marines' STOVL version on two-year "probation" because of problems with the aircraft's structure and propulsion system. Condemning the failure to get costs under control, which he blamed partly on the lack of financial discipline in the defence department during George Bush's presidency and partly on execution failures by Lockheed Martin and its partners, Mr Gates said that "the culture of endless money that has taken hold must be replaced by a culture of restraint".

The latest cost estimates from the Government Accountability Office (GAO), published in May to coincide with a Senate Armed Services Committee hearing on the F-35 programme, were shocking. The average price of each plane in "then-year" dollars had risen from \$69m in 2001 to \$133m today. Adding in \$56.4 billion of development costs, the price rises from \$81m to \$156m. The GAO report concluded that since 2007 development costs had risen by 26% and the timetable had slipped by five years. Mr Gates's 2010 restructuring helped. But still, "after more than nine years in development and four in production, the JSF programme has not fully demonstrated that the aircraft design is stable, manufacturing processes are mature and the system is reliable". Apart from the STOVL version's problems, the biggest issue was integrating and testing the software that runs the aircraft's electronics and sensors. At the hearing, Senator John McCain described it as "a train wreck" and accused Lockheed Martin of doing "an abysmal job".

What horrified the senators most was not the cost of buying F-35s but the cost of operating and supporting them: \$1 trillion over the plane's lifetime. Mr McCain described that estimate as "jaw-dropping". The Pentagon guesses that it will cost a third more to run the F-35 than the aircraft it is replacing. Ashton Carter, the defence-acquisition chief, calls this "unacceptable and unaffordable", and vows to trim it. A sceptical Mr McCain says he wants the Pentagon to examine alternatives to the F-35, should Mr Carter not succeed.

But the longer-term outlook for the F-35 is uncertain. Some military strategists already think that the job the F-35 is meant to do can be better handled by cruise missiles and remotely piloted drones. In many roles, unmanned planes are more efficient: they carry neither a bulky pilot nor the kit that keeps him alive, which means they can both turn faster and be stealthier. And if they are shot down, no one dies. Even the F-35's champions concede that it will probably be the last manned strike fighter aircraft the West will build.

Full article at: <http://www.economist.com/node/18958487>

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