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The Stealth Debate

While some experts say stealth no longer matters, nations continue to develop signature reduction technologies



Written by: [Jan Tegler](#) on June 5, 2012

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F-35A airframe Air Force-6 on its first night flight. While the F-35 program has stealth as one of its requirements, other aspects, such as the short take off/vertical landing requirement and airframe commonality, have also been major drivers of the design. Lockheed Martin photo by Tom Reynolds

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“You could make an argument that the F-22’s cost drivers weren’t primarily due to its stealth features either,” he continued. “Look at all the other stuff, from supercruise to the APG-77 radar to the F119 engines. There’s an entirely new turbine engine embedded in these costs. There’s so much going on it’s hard to tell what costs are associated with stealth and which are not.”

“Sweetman agrees that the high cost of the F-35 “isn’t entirely due to wanting to make the airplane stealthy,” arguing that trying to make the JSF work for three mission sets has put the program behind the eight ball.

“I think a lot of the program’s problems can be traced back to trying to accommodate supersonic, agile fighter performance and [STOVL \[short takeoff/vertical landing\]](#) in a single airframe,” he said. “The design is very heavily driven by STOVL and that has been a cause of many complications, including the aircraft’s weight gain early on. The rapid redesign due to that is one of the things that has loused up the production program. The estimated costs, time line, and risks of the program were horribly underestimated. There have been a lot of issues but what they’re trying to do is quite complex. The problems are not entirely due to stealth, but I don’t think you can absolve stealth from the challenges of the program.”



On the central question of why other nations are investing in stealthy aircraft despite the challenges, Aboulafia concludes that there are many factors in the preservation of a qualitative edge in air power. Stealth, he maintains, can be valuable if invested in carefully.



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First F-35C Night Flight



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The Russian Sukhoi T-50 was the first flying example of a foreign competitor's stealth technology, but its signature reduction features are limited in comparison to the U.S. F-22 Raptor, perhaps as a conscious compromise between high performance, price, and stealth. Photo courtesy of Sukhoi

“There are so many other factors in preserving a qualitative edge, whether it's a proper ISR [intelligence, surveillance, and reconnaissance] net with myriad off-board sensors or better use of PGMs [precision-guided munitions] or many other things. Some of it is downright old-fashioned, like better air-to-air refueling, etc. Is stealth a worthwhile part of it? Given the fact that the recurring costs look to be pretty

modest, I'd say you could argue that yes, it is. But I'm kind of in the middle.

“Anything that expresses stealth as the primary design parameter like the F-117 and B-2, I understand why that's perishable and not worth paying for. But the idea of incorporating lessons in stealth design into modern combat aircraft – I can't see why not.

“The signs so far are that other countries will use stealth in a different way,” Sweetman said. “They're not trying to convert their entire fighter fleet to stealth, not in the foreseeable future. So for a future Russian air force T-50, if you get involved in a full-scale, high-end air war where you are going to engage at long range, the airplane has the speed, altitude, and armament to engage from outside detection range with a fairly lethal weapon shot.

“For China, if I had to guess, I would say the J-20 is designed to go out and chop our high-value air assets, the AWACS, [Airborne Warning And Control System aircraft], Rivet Joints, and tankers, etc., reducing the capability of other aircraft going to the air battle. If you look at what the British and French are doing, they're looking at producing a stealthy UCAV [unmanned combat air vehicle], which, again, is a sort of niche player but might be designed to go out and harass, suppress, and destroy the enemy's air defenses. It's a subsonic, not-very-maneuverable aircraft.”

Both men agree that the affordability of stealthy aircraft going forward is key to their future

with the United States and other nations. Aboulafia worries that the United States is losing the “political will to design and develop the kind of tools to position ourselves as a superpower worldwide. That includes some kind of top-quality manned fighter.”

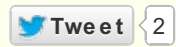
Sweetman thinks the expense of stealth will soon cause America to reassess the application of it. “If your resources are finite, then you have to ask yourself if the extra cost of building stealth into your tactical air force is a better investment than some of the other things you could do. The answer to that is visibly transpiring in front of us.

“Submarines are terribly useful but you’d be crazy to make your entire navy submarines.”

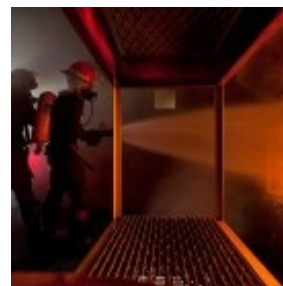
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Boyd H.



5:44 PM June 11, 2012

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