THE AIR FORCE'S PROBLEM IS BIGGER THAN THE F-22 VS. THE F-35

In last week's Half-Full Report (see the section on *Debbie Does USAF*), Jack asked me to comment about America's F-22A Raptor and F-35A/B/C Lightning II fighters. Namely: if the F-22 Raptor was the better fighter, why was it canceled in favor of the F-35?

Both fighters sit at the nexus of some pretty big assumptions and questions about US air power in the next few decades, so it's hard to give a brief answer, but I'm going to try.

In brief: Yes, the F-22 is a much better fighter than the F-35. Indeed, it remains the best fighter in the world by a wide margin. The flip side is that it can't perform some roles, costs a lot to maintain, and will cost quite a lot ($7 billion or more) to upgrade to modern standards.

Those weaknesses, and the USAF/USN's institutional desire to protect their F-35 program from unraveling, led Secretary of Defense Robert Gates to kill F-22 purchases in the FY 2010 budget. Even though the military took the unusual and wise step of storing the tools and other items needed to restart production, any line restart would come with a $1-3 billion up-front price tag. The last F-22 has been produced (total: less than 200), and what's left is the big F-22 upgrade program.

The single-engine F-35 has better sensors than the F-22, and is a better strike platform, though it will never be anywhere close to the A-10 for supporting troops on the ground. It's less stealthy than an F-22, especially from the rear, which may get it in trouble against advanced air defense systems that have been fielded since it was designed. Its aerial performance is also a controversial subject, and may be sub-standard compared to existing and future fighters.

Worst of all, a fighter that was originally expected to be the F-16's successor has morphed from a mid-market price tag to about 70-80% of an F-22's cost, and its operating and maintenance costs have also risen. If it goes into the same death-spiral of cuts driving cost increases driving more cuts, it could even end up with a cost profile that's similar to the F-22's, without the performance.

The F-35 is an international program. Australia, Britain, Canada, Denmark, Israel, Italy, the Netherlands, Norway, Singapore, and Turkey are all participating to various degrees. That has made it impossible for the USA to kill, but it's amounting to unilateral allied disarmament, as countries are cutting their future fighter fleets in half or worse to pay for it.

Rival twin-engine, high-end stealth fighter designs are appearing on the horizon. Russia & India's PAK-FA (likely to become SU-50) is flying, and so is China's J-20. Both are original designs. Both are expected to approach F-35 stealth levels, with aerial performance that may be competitive with the F-22 in the case of Russia's plane.

We probably won't see SU-50s in any significant numbers before 2025, however, due to the time required for testing, ramping up production, and learning how to really use an advanced stealth fighter. China's J-20 will either take as long to become operationally ready, or it will be rushed into service with all of the bugs and training gaps one would expect.

I could explain in rather more detail, but I don't think the core problem is F-22 vs. F-35. The core problem is the slow-motion collapse of American TacAir - tactical aircraft, fighters and their weapons - as each generation's plane sees its purchase and operating costs rise faster than inflation.

This has been going on since WW2, with very occasional exceptions like the A-10 and F-16. We're now hitting an inflection point with the F-22/ F-35, where the likely numbers produced cross into the danger threshold.

The double-loop question is whether all-stealth TacAir is what America really needs from its air force, or whether a combination of drones, truly low-cost fighters, and long-range strike aircraft is a better choice. That's an article all its own. I'll just say that there is something to that alternative concept, but it isn't a magic bullet, and comes with serious tradeoffs of its own.

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