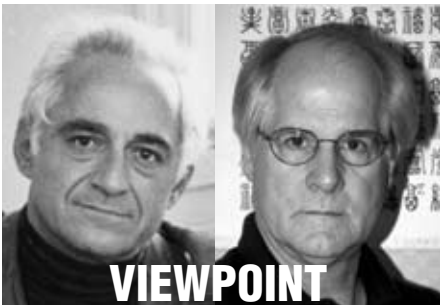


OPINION

The F-22: Not what we were hoping for

The F-22 fighter aircraft's focus on stealth brings big disadvantages in cost, weight and manoeuvrability, argue Pierre Sprey and James Stevenson



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For decades, the US Air Force has pushed the F-22 as its fighter for the 21st century. Advocates tout its technical features: fuel-efficient, high-speed 'super-cruise', advanced electronics and reduced profile against enemy sensors, known as 'stealth'.

However, on measures that determine winning or losing in air combat, the F-22 fails to improve the US fighter force. In fact, it degrades our combat capability.

Careful examination of actual air-to-air battles tells us that there are five attributes that make a winning fighter. These attributes shaped the F-15 and the F-16.

They are: (1) pilot training and ability; (2) obtaining the first sighting and surprising the enemy; (3) outnumbering enemy fighters in the air; (4) outmanoeuvring enemy fighters to gain a firing position; and (5) consistently converting split-second firing opportunities into kills.

The F-22 is a mediocrity, at best, on (4) and (5). It is a liability on (1), (2) and (3).

The most important attribute – pilot quality – dwarfs the others. Air combat history from both small and large wars makes that obvious. After the Israel Air Force (IAF) swept Syrian MiGs from the sky in Israel's 1982 invasion of Lebanon with an 82-0 exchange ratio, the IAF Chief of Staff told US congressional staffers that the result would have been the same had the Syrian and Israeli pilots switched aircraft.

Great pilots get that way by constant dogfight training. Between 1975 and 1980, at the Navy

Fighter Weapons School ('Topgun'), instructor pilots got 40 to 60 hours of air combat manoeuvring per month. Their students came from squadrons getting only 14 to 20 hours per month. Flying the cheap, simple F-5, the robustly trained instructors consistently whipped the students in their 'more capable' F-4 Phantoms, F-14 Tomcats and F-15 Eagles. Today, partly thanks to the pressure on the air force's training budget from the F-22's excessive purchase and operating costs, an F-22 pilot gets 12 to 14 hours of flight training per month. For winning future air battles, this is a huge step backward.

For half a century, the air force has been attempting to get the jump on enemy fighters through expensive, complex technology. Billions of dollars were spent trying to perfect long-range radar missiles to achieve 'beyond-visual-range' (BVR) kills. Extraordinary kill rates, as high as 80 to 90 per cent, were promised when projects were being sold. Success rates in actual combat were below 10 per cent. Simple, more agile, shorter-range infra-red missiles and guns were far more successful and effective.

Worse, the 'Identification Friend or Foe' (IFF) systems that must distinguish enemies from friends before launching BVR missiles failed in every war. As recently as Operation 'Iraqi Freedom' in 2003, misidentified allied aircraft were lost to US systems. The air force now tells us the only way to get the jump on enemy fighters supposedly launching BVR missiles is with stealth. But stealth solves neither the problem of less effective, high-cost BVR radar missiles nor the IFF conundrum. Moreover, stealth has failed to make our fighters invisible to radar and it brings crippling disadvantages.

In Operation 'Desert Storm' in 1991, according to the Government Accountability Office, so-called stealthy F-117s were significantly less effective bombers than the air force described publicly – there is anecdotal evidence that ancient Iraqi radars detected them. In the war against Serbia in 1999, non-stealthy F-16s had a lower loss rate per sortie than the F-117s. The F-22 will not be invisible to radar in real combat, where it cannot control detection angles and radar types.

The most obvious disadvantage stealth brings to the F-22 is extraordinary cost; it grossly reduces the numbers we will buy. New Department of Defense data shows the total unit cost of the F-22 has grown from about USD130 million to over USD350 million per aircraft. Result? The original buy of 750 is now down to 185.

Moreover, stealth plus the F-22's complexity result in unprecedented levels of maintenance downtime. That further reduces numbers in the air. 185 F-22s will support about 120 deployed fighters. They will be lucky to generate 60 combat sorties per day, a laughable number in any serious air war. In World War II, the Luftwaffe could field only 70 of its revolutionary jet, the Me-262. It caused alarm among Allied pilots but had negligible effect on the air battle.

Furthermore, the stealth requirement adds significant drag, weight and size. Size is the most crippling. Why? Because real-world combat is visual combat. Because the F-22 is much bigger than most fighters, it will be detected first, reversing the theoretical advantage it derives from stealth. Topgun had a saying: "The biggest target in the sky is always the first to die."

Once seen, the F-22 has trouble outmanoeuvring the enemy. Its weight hurts the key performance measures of turning and accelerating. Put simply, both the F-15A and F-16A out-turn and out-accelerate the F-22.

Finally, stealth harms the F-22's quick-firing ability. To retain stealth, the gun and missiles must be buried behind doors that take too long to open to exploit instantaneous opportunities.

The air force will argue strenuously that we are wrong and the F-22 has excelled in air-to-air exercises against all comers. However, our information is that these are 'canned' engagements in which the F-22 is pitted against opponents in joust-like scenarios set up to exploit the F-22's theoretical advantages and exclude its real-world vulnerabilities.

There is a way to find out who is right. A serious test of F-22 capabilities would pit it against pilots and aircraft the air force does not control using rules of engagement dictated by combat and the ratio of F-22s to enemies that the tiny F-22 inventory should expect in hostile skies.

We both would be delighted to observe any such realistic exercises and to report back to this magazine. Nothing would please us more than to find that we are wrong and US fighter pilots have been given the best fighter in the sky.

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