

We Fly the F-22 Raptor

Plane & Pilot

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I'm cruising at 40,000 feet above Nevada in America's front-line fighter. Perched out on the pointy end, I can't see what's following behind, but I know it's roughly 63 feet long and weighs as much as 64,000 pounds.

In contrast to the snug cockpit of an F-16 Falcon, my "office" feels almost as relaxed as an easy chair, with plenty of space in every direction. It's about as comfortable as a jet fighter can be.

Airspeed is steady on Mach 1.5 or 860 knots, comparatively loafing, yet devouring the sky at 14 miles a minute. The thrust levers are set to max military power as I watch Las Vegas drift by far to my left. Technically, this is called supercruise, flying beyond Mach 1.0 without using afterburner.

"My" jet is closing on four unknown targets, well beyond visual range, converging from the north at Mach 1.2. All four targets suddenly shift to red, my cue that AWACs has positively identified them as bad guys.

I roll the right side stick hard left to bring the nose around and simultaneously shift the target designator on the throttle quadrant to the nearest enemy. According to my radar, the targets are all within 35 miles. When the annunciator lights on the target, I mash the red, "fire" button on the stick.

In less than a second, the weapon I've selected, an AIM-120C AMRAAM missile, deploys from the onboard weapons bay, leaps off the rail and streaks out in front of my jet, blazing toward the target at Mach 4.0.

In a heartbeat, I shift the cursor to the next closest target, punch the fire button, and a second AMRAAM leaves the airplane's belly and races ahead of me toward its target. I repeat the procedure on aircraft three and four and watch the sky ahead.

Suddenly, far off in the high sky, I see an explosion, followed by three more in rapid succession as the missiles impact each of the enemy aircraft. The center-mounted threat screen shows the sky ahead clear of targets. Raptor 4, bad guys 0. I pull the nose slightly above the horizon and roll the airplane to the right in celebration.



Yes, it's true, I'm flying the F-22 Raptor.

OK, so it was only the simulator. Several decades ago, the Air Force did allow me to fly the real T-38, F-4, F-15 and F-16 in conjunction with stories for this magazine, but they're not quite ready to drop me into the cockpit of a real F-22 just yet. That would be a little difficult considering that there are no two-seat F-22s, and I have no resemblance to a 30-year-old Air Force captain. It's probably reasonable to assume no journalist will ever pilot a real F-22.

My opportunity to "fly" the F-22 came at a press event staged in Torrance, California at Honeywell Aerospace, a major avionics systems contractor on the F-22 program. I was one of a handful of journalists allowed the privilege of sampling the F-22's systems and capabilities.

By any measure, the F-22 Raptor is an amazing aircraft, very likely the most sophisticated and talented fighter ever to fly. At least, that's what the U.S. government claims. If that sounds xenophobic (since we don't really know what the Russians or Chinese might be cooking up), it's an opinion shared by many in the defense industry. Even most international defense analysts agree that the F-22 is one of a kind.

The airplane features innovations in every parameter of military aviation; power, target acquisition, stealth, maneuverability, speed and performance. For power, the F-22 flies behind a pair of 35,000-pound-thrust, P&W F-119 engines that employ thrust vectoring. Nozzles at the rear of the engine deflect as much as 20 degrees up or down, allowing unprecedented maneuverability. The F-22 can execute the Herbst maneuver or Pugachev's Cobra, both methods of rapidly reversing direction to fire at an enemy behind the Raptor.

The design also emphasizes supercruise, the ability to operate at extremely high speeds without using afterburner. Supercruise helps minimize the airplane's heat signature and reduces fuel burn while still providing excellent performance. Some reports suggest the F-22 may be able to maintain as much as Mach 1.8 without using afterburners.

In addition, like the F-117 and the B2, the F-22 features a stealth system that reduces its radar cross section (RCS) to about the size of a ½ inch diameter ball bearing, making the airplane almost impossible to detect using conventional radars. Radar absorbing materials help soak up or deflect any probing radar signals. Though the Raptor may be fitted with external weapons on a series of wing hard points, most of the Raptor's weapons are normally stored in enclosed bays that open just long enough to deploy the selected armament. (Opening the bays makes the airplane more visible to radar.)

(Early tests with the F-117 suggested stealth was indeed effective. At Edwards AFB in California, one of the air force's most sophisticated radars was aimed at an F-117 parked two miles away at the end of a runway. The radar received no return until a bird landed on the airplane's tail.)

For its part, the Raptor mounts a Beyond Visual Range, APG-77 radar system that can detect targets out to 100 miles while limiting the Raptor's own radar emissions. By transmitting radar pulses in varying frequencies and for short intervals, the system makes it more difficult for opposing radars to lock on. This means the F-22 can fight an enemy that's out of sight and out of his radar detection capability. A flight of enemy aircraft will simply be flying along, and suddenly one of them will blow up.

In an age of air-to-air missiles that travel at 2300 knots or more, pure speed isn't as important as it used to be, but the Raptor's max speed is published as Mach 2.25. Max velocity in supercruise mode (without afterburner) is listed as Mach 1.82.

In these tough economic times, President Obama's current defense secretary, Robert Gates, has proposed capping procurement of F-22s at the current order limit of 187 airplanes, since the Raptor costs in excess of \$138 million per airplane. Gates feels the better investment is the newer Lockheed Martin F-35 Joint Strike Fighter, a single-engine, STOVL (Short Takeoff Vertical LandinG) fighter with a price half that of the F-22. The F-35 could be operated from aircraft carriers and is in great demand by at least a dozen of our allies.

Like the F-15 Eagle before it, the Raptor is a dedicated fighter, designed from the outset to defeat any threat. Unlike the F-35 Lightning II, the F-22 will never be sold outside the USA, an American fighter strictly for America.