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Could Trump Really Replace the F-35 With a Super Hornet?

No. But also yes.



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By Eric Tegler Jan 10, 2017

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Last month, President-elect Donald Trump created (another) storm of controversy [when he tweeted](#) that, because of the spiraling cost of the F-35, he had asked Boeing to "price out a comparable F/A-18 Super Hornet."

Donald J. Trump [@realDonaldTrump](#) [Follow](#)

Based on the tremendous cost and cost overruns of the Lockheed Martin F-35, I have asked Boeing to price-out a comparable F-18 Super Hornet!

2:26 PM - 22 Dec 2016

15,037 62,944

Trump's tweet is likely little more than a negotiating tactic, shining a very public light on the F-35's cost. Still, the point about the Joint Strike Fighter is a fair one, so let's consider his idea. What would this souped-up Super Hornet look like?

SUPER DUPER HORNET

There are some things the F/A-18 just can't do. Simply put, today's Super Hornet isn't even comparable to the short takeoff, vertical landing (STOVL) capabilities of the F-35B, the Marines' version of the Joint Strike Fighter, and it never will be. The Marines currently fly older F/A-18s, but without an STOVL F-35B to succeed the AV-8B Harrier, they would have no airplane to put on the Navy's 11 amphibious assault ships. Without the F-35B, those ships (essentially light aircraft carriers) are far less potent.

But let's set aside the Marines' problem for a moment, because the idea of an alternative Advanced Super Hornet is neither new nor implausible. Boeing put forward and [tested an Advanced Super Hornet \(ASH\) concept](#) in 2013. With conformal fuel tanks and an enclosed weapons pod, this improved Super Hornet is 50 percent stealthier than the current model. The added fuel tanks also increase range and would be paired with enhanced engines that boost thrust by 20 percent. Along with improved avionics and better cockpit displays, the Advanced Super Hornet would be a significant upgrade to America's aerial arsenal.

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STOVL F-35 Lightning II performing a vertical takeoff.

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Trump was actually late to the party in this case—the Navy, in particular, has already responded to F-35 delays and cost overruns by considering more F/A-18s. "That's a debate that's already been had and in some senses, already resolved in the Super Hornet's favor," aerospace analyst Richard Aboulafia told *Popular Mechanics*. "It's been four years now wherein the Navy has been procuring [Super Hornets] at a ratio of four to one over F-35Cs."

But not all armed forces are the same. Aboulafia adds that President-elect Trump probably hasn't considered the fact that an Advance Super Hornet would need serious modifications to work for the U.S. Air Force and replace the F-35A. He also points out that there's another proposed Boeing alternative—the F-15 Silent Eagle—which has many of same enhancements as the ASH but with even better stealth, range, and airframe performance. So where does that leave us?



Boeing's Advanced Super Hornet

Boeing

SACRIFICING STEALTH

Neither the Advanced Super Hornet nor the Silent Eagle would be as stealthy as the F-35. They simply weren't optimized for it. But is the F-35's stealth the significant advantage proponents claim? According to the Israelis, the F-35's stealth capabilities will only be effective for 5 to 10 years—a point they made more than four years ago. Since then, [they've added their own electronic warfare systems](#) to the F-35 to combat this coming obsolescence.

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As a recent piece in the [National Interest pointed out](#), the U.S. Air Force acknowledges that electronic warfare will become increasingly necessary to support stealth aircraft. Both the Chinese and Russians are developing low-frequency radars that can effectively track stealth aircraft. As these low frequency radars proliferate, even airplanes like the F-35 will have to be supported and escorted by specialized electronic warfare aircraft like the Super Hornet-based EA-18G Growler.



Why the F/A-18 Hornet Is Such a Badass Plane

Far less discussed is the fact that stealth airplanes are maintenance nightmares. Preserving their stealth attributes (coatings, skin materials) is tough on land and even more difficult at sea. Current Super Hornets and the ASH would largely circumvent this challenge. It's one of the unspoken reasons [why the Navy has resisted buying large numbers of F-35Cs](#).

So if stealth can be increasingly countered, is it best to invest in a stealth fleet if you have to comprise airframe performance and cost efficiency in the process?



EA-18G Growler

Flickr + Jacob G. Kaucher / U.S. Navy

BETTER EYES AND EARS

The F-35 has significant jamming/attack capabilities of its own thanks to its active electronically scanned array (AESA) radar. Though F-35's AESA radar can act as a jammer, it can only do so within a fairly limited range of frequencies. The Super Hornet and EA-18G also have their own AESA radar, so an Advanced Super Hornet could leverage such capability. Likewise, it could take advantage of [Raytheon's Next Generation Jammer \(NGJ\)](#) currently being developed for the Super Hornet, which can jam more frequencies than an AESA radar.

The F-35 has embedded antennas around its fuselage which provide an internal BAE Systems receiver with a detailed picture of electronic threats (surface to air radars, jammers, airborne radars). Current Super Hornets don't have this level of threat awareness but an ongoing Navy avionics upgrade would move them closer the F-35.

However, an ASH could integrate the F-35 threat system or, better yet, adopt the Growler's Northrop Grumman ALQ-218 package, which would make it even more capable than the F-35.

Lockheed Martin also prides itself on the F-35's ability to combine all its sensor data into a single intelligible display. The F/A-18E/F can't do that, but the Navy is working on a Multi Sensor Integration (MSI) system that would give it similar sensor powers. The large area cockpit displays proposed for the ASH could be reworked to use this new MSI system.

Also, adding more sensors would be much easier on a Super Hornet than an F-35. Without needing to preserve stealth, such sensors can simply be pod-mounted on one of the Super Hornet's wing stations or even within an external fuel tank. The ease of integration makes updating technology far more practical on a Super Hornet.

GIF





F-35C conducts arrested landing testing in 2014.

A LEAN, MEAN DATA MACHINE

The F-35 is designed to capitalize on information from external networks and pass it to other F-35s, F-22s, or 4th-generation fighters like the F/A-18. However when it transmits information, it potentially gives away its position, a concern not as relevant to an Advanced Super Hornet. Moreover, the F-35s Link-16 and Multifunction Advanced Datalink don't provide enough bandwidth to send as much info as its sensors can produce.

Along with a better sensor system, the Navy is also working on a very high data rate Tactical Targeting Network Technology datalink for the Growler. Like most war technology we've mentioned, this datalink could also be easily integrated into the current Super Hornet fleet or future ASH.

Of course Boeing wouldn't tell *Popular Mechanics* what it is preparing for President-elect Trump, but replacing a good number of F-35s with an Advanced Super Hornet is not only possible—it actually makes some sense. Although Boeing's F-15SE would be a more logical choice, says Aboulafia, he acknowledges it's much more expensive plane.

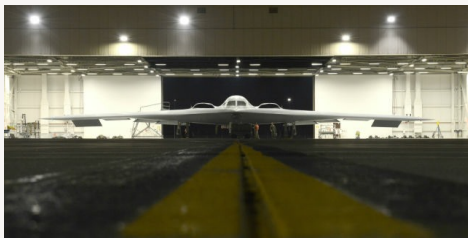
Actually, there's other aircraft that might be an even better option. "I'm still convinced, re-birthing the F-22 line is a good idea," he says.

If President Trump wants some attention, nonchalantly tweeting "bring back the F-22" would certainly do the job.

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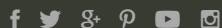
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