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The U.S. Should Focus Military Support for Ukraine on Weapons Systems That Will Aid the Fight—the F-16 Will Not Do That

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KEY TAKEAWAYS

Russian surface-to-air-missiles (SAMs) fielded on both sides of the war in Ukraine have prevented effective employment of both sides' fourth-generation fighter jets.

Even with advanced U.S. weapons, U.S. F-16s would be no more likely to survive the Russian SAMs than Ukraine's fleet of fighters.

The U.S. should continue to support Ukraine with weapons systems and munitions that have proven to be effective for its military—and forgo providing F-16s.

The United States is considering supplying F-16s to the Ukrainian Air Force to help Ukraine fight the war against Russia. Unfortunately, the Russian surface-to-air-missile (SAM) systems on both sides of the conflict are so effective that pilots flying fourth-generation fighters for Ukraine or Russia rarely elect to attack enemy positions because the odds of success or survival are so low.

The F-16s that the U.S. is considering supplying would be no more likely to survive or be more effective against the Russian SAM systems than the MiG-29s, SU-27s, and SU-23s that the Ukrainians are currently flying. The U.S. should continue to provide military aid to Ukraine with systems that have proven to be effective against the Russian military, not the F-16.

Losses aside, since the early days of this war, there has been little news about Russian or Ukrainian

airpower effectiveness, because airpower has been largely absent from the battlefield. Stories like the "Ghost of Kyiv" propagated ideas of what a well-flown fourth-generation fighter can do in a high-threat environment, such as Ukraine. The ghost was a myth,[1] however, and the Russian SAM systems fielded by both the Russians and Ukrainians are so effective against fourth-generation fighters that pilots rarely attack enemy positions because the odds of success (or survival) are so low. The threat has driven both sides to execute sporadic, pop-up attacks or standoff operations[2] that have had little tactical, much less operational, effect on the battlefield.

The Russians are employing the mobile S-400, perhaps the most advanced SAM system in the world,[3] in Ukraine. The system is lethal against non-stealth fighters and has forced the Ukrainian pilots to fly either well outside the SAM's effective range or to fly at incredibly low altitudes right up until they pop up from low altitude and attempt to acquire and hit targets they can find before diving back into low altitude. Due to the S-400, the overall impact of the Ukrainian Air Force has been minimal.

To help to counter the S-400 threat, the U.S. has given the Ukrainians High-Speed Anti-Radiation Missiles (HARMs).[4] In order to be effective, those weapons must be launched within the missile's maximum range and at radars that are actively emitting. With no onboard system that can determine the SAM's location, or detect its emissions, hitting an S-400 (or any other radar) with a $200,000[5] HARM launched from a MiG-29 or SU-27 is little more than blind luck.

Some airpower experts believe that providing the Ukrainians with F-16s will change that paradigm and turn the tide of the war in favor of the Ukrainians. Yet, even the U.S.'s most advanced F-16s are just as ill-suited for that high-threat environment, and the weapons they are capable of employing will be just as ineffective as the jets, munitions, and air-to-surface tactics that the Ukrainians are currently employing.

The Problem with Fourth-Generation Fighters

If the war in Ukraine teaches just one thing about airpower, it is that fourth-generation platforms have no place on the modern battlefield. Fourth-generation, and more advanced four-plus-generation, fighters[6] are those designed and built starting in the late 1970s through today's F-15EX,[7] which the United States will be acquiring for the next several years. These jets have advanced engines, maneuverability, avionics, all-aspect air-to-air missiles, and they can drop precision-guided munitions. Fourth-generation fighters are very capable in low-threat to medium-threat environments,

such as the recent conflicts in Afghanistan, Iraq, and Syria, but, without stealth coatings they are completely outmatched in a high-threat environment like in the skies over Ukraine.

F-16 Capabilities

Initially fielded before either the MiG-29 or SU-27, the F-16 has gone through several block upgrades, although its fourth-generation airframe has remained basically the same for the past 45 years.[8] In the late 1980s, F-16s with more advanced avionics (Block 30/32s and 40/42s)[9] were fielded with targeting pods,[10] allowing pilots to identify targets and employ short-range, precision-guided munitions.

In the early 1990s, even more advanced F-16s (Block 50/52s) were fielded with the HARM Targeting System (HTS) pod[11] that allows teams of these fighters, known as Weasels, to sense SAM radar emissions, determine their location, and suppress them with HARMs.

Weasels are very capable, but they must have "line of sight" to the target, which means that they can be shot down by the threats that they are trying to destroy, as well as others they may not detect. As noted, the primary SAM the Weasels would be up against in Ukraine is Russia's S-400. That system was fielded 15 years after the Block 50 F-16 and designed specifically to outclass the Weasel.

Standoff Weapons and the F-16

There are three weapons within the F-16 portfolio that observers have mentioned as potential additives or game changers for the Ukrainian Air Force: HARMs, the Small Diameter Bomb (SDB), and the Joint Air-to-Surface Standoff Missile (JASSM).

In an all-out war, well-trained Weasel pilots could suppress Russian S-400s with HARMs, but it would require jets to fly close enough to bait S-400 operators into turning their systems on, allowing the Weasels to go to work. More than a dozen operational Weasel pilots who were interviewed in 2017 said that the aircraft losses from such a duel would be unsustainable and each conveyed the belief that the only fighter capable of taking on the S-400 and avoiding those types of losses is the fifth-generation fighter designed specifically for that fight—the F-35.[12] Even if the U.S. gives the Ukrainians its newest and most capable F-16s (the Block 50/52) to make HARMs more effective, the combination would still be irrelevant to the ongoing fight in Ukraine.

SBDs can be carried by F-16s and have small wings that unfold after they are released, allowing them to glide dozens of miles. The latest version (SDB

II) can even acquire and hit mobile targets.[13] The distance that SDBs can glide is determined by the altitude and speed at which they are released, and even at their longest range,[14] a fourth-generation fighter attempting to employ them would be detected and engaged by S-400s long before it could release those munitions.

The last of the standoff weapons is the JASSM. JASSMs are subsonic, stealthy cruise missiles that can be carried by Block 50/52 F-16s. Older blocks have recently been found to be capable of carrying JASSMs but have yet to receive the software or flight certifications required to employ these munitions,[15] and giving the Ukrainians America's most modern jets in spite of its own shortfalls[16] of fighter jets would cause the U.S. to incur unacceptable risk.

While the sentiment behind giving Ukraine F-16s is noble, sending even the best fourth-generation fighters to face a fifth-generation SAM threat would be a costly mistake—one that some well-informed Members of Congress recognize: During a recent House Armed Services Committee meeting, Ranking Member Adam Smith (D–WA) said that the F-16 is "not the right system" to send to Ukraine because it would "face of a ton of air defense." He went on to add: "A fourth-generation fighter in this particular fight is going to struggle to survive."[17]

While Smith is right about not sending F-16s to Ukraine, it is hard to understand why he does not extend that same logic to U.S. procurements. He has been one of the biggest opponents of buying the fifth-generation F-35A because of the perceived acquisition and sustainment costs of that jet. The F-35 is the only system that can find, fix, and destroy the S-400, and it costs millions less to acquire and 10 percent less to sustain than the fourth-generation F-15EX,[18] a fighter that would be no more effective in Ukraine than the MiG-29s or SU-27s currently operating there.

The threats that U.S. fighter jets would face in a fight with China far exceed those found in Ukraine, and even in the mythical hands of the "Ghost of Kiev," the F-15EX would be a death trap for pilots attempting to operate anywhere near Chinese (or Russian) SAM systems. If the war in Ukraine teaches just one thing about airpower, it is that manned fourth-generation platforms have no place on the modern battlefield.

There are other unmanned aerial systems (UAS) that the U.S. has retired or is in the process of retiring, such as the MQ-1 Predator and MQ-9 Reaper, that are much cheaper and would provide Ukraine with the capability to engage deeper targets like marshalling areas and logistical supply areas. Large UAS systems would certainly take losses, but their employment would not be hampered by the standoff operations required of manned systems and they carry the potential to shift the war's momentum without undue risk to the U.S.

Recommendations for the U.S.

To best support Ukraine in its defensive war against Russia, the Administration should:

- **Forgo** providing fourth-generation fighters to the Ukrainian Air Force.
- **Commit** to train Ukrainian operators on, and deliver, more capable aerial systems like the MQ-1 Predator and MQ-9 Reaper UAS to give Ukraine's military a reliable and longer-range aerial targeting capability.
- **Continue** to provide Ukraine with weapons systems and munitions like the Patriot and the National Advanced Surface-to-Air Missile System (NASAMS) air defense batteries, Stinger surface-to-air missiles, Javelin and AT-4 anti-armor systems, long-range artillery systems and munitions, and unmanned aerial systems like Switchblade and Phoenix Ghost that have proven so effective on the battlefield.
- **Continue** to provide Ukraine with targeting assistance, imagery support, and engagement recommendations on targets of tactical, operational, and strategic value.

Conclusion

The success of Ukraine's military in its war with Russia relies on Western weapons systems and munitions that will shape the battlefield. Providing Ukraine with fourth-generation fighters like the F-16 would be a huge public relations win for both the U.S. and Ukraine, but it would ultimately be a costly mistake that would deliver virtually no impact on the war. U.S. strategy should focus on giving the Ukrainians more air defense systems, such as the Patriot system, to deny Russian airpower, while continuing to supply them with the artillery, rockets, and tanks required to take the fight to that enemy.

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Endnotes

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7. Ibid., p. 7.
8. Master Sgt. Brian Ferguson, "Airframe: The F-16 Fighting Falcon," *Airman Magazine*, February 12, 2018, https://www.airmanmagazine.af.mil/Features/Display/Article/2595848/airframe-the-f-16-fighting-falcon/ (accessed March 10, 2023).
9. F-16s with the same first number (Block 30 and Block 32) have the same avionics and capabilities package; the only difference is the engine that powers each jet. F-16s with block numbers ending with a "0" (Block 30, 40, and 50) are powered by General Electric engines, while those ending in "2" (Blocks 32, 42, and 52) are powered by Pratt and Whitney engines.
10. "Pods" are systems that are physically bolted on to these aircraft. Not all Block 40/42 aircraft have targeting pods and not all Block 50/52 jets have HTS or targeting pods, although most U.S. blocks of those jets do have those systems.
11. Ibid.
12. Author conducted these interviews in March 2017 at Spangdahlm Air Base, Germany. John Venable, "Independent Capability Assessment of U.S. Air Force Reveals Readiness Level Below Carter Administration Hollow Force," Heritage Foundation *Backgrounder* No. 3208, April 17, 2017, p. 7, https://www.heritage.org/sites/default/files/2017-04/BG3208.pdf.
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