

Further Thoughts on Battlefield Rotorcraft

Russian and other demonstrations of standoff weapons on helicopters suggest a future for attack tilt-rotors.

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Developments over the past few weeks have reinforced my views about the future of battlefield air support. I have four points.

The Russian Army's helicopter force continues to suffer high casualty rates in Ukraine, which indicates that direct attack against sophisticated air defenses is very challenging.

However, recent reinforcement of the helicopter force in Berdyansk, mostly out of Ukrainian missile range, with its own standoff missiles, indicates that the Russian Army is learning from past failures.

The Italian Army has already pursued this standoff weapons approach, and the US Army is close behind.

However, a full analysis of alternatives for the US Army's Future Attack and Reconnaissance Aircraft (FARA) could produce a very different result than presumed.

The result is that technologists, industrialists, and investors should consider a future in which tilt-rotors are more important to combat aviation than conventional helicopters, and perhaps other types of aircraft as well.

Firms mentioned in this report include Bell, Boeing, Leonardo, Lockheed Martin, Rafael, Russian Helicopters, Sikorsky, and Thales.

Russian Army helicopters continue to suffer high casualty rates in Ukraine.

Writing a year ago in *War On The Rocks*, David Barno and Nora Bensahel found “rotary wing at risk” from the record of the Russo-Ukrainian War in its first few months. At roughly the same time, Stavros Atlamazoglou and Sash Tusa ventured similar opinions (see the references below). Over the ensuing year, the Russian Army's helicopter force has continued to have a difficult time. As Benjamin Brimelow related last November, British Intelligence was then estimating that the Russian Army had lost at least a quarter of its latest attack helicopter, the fast coaxial Kamov-52, built by JSC Russian Helicopters. The Ka-52 has been more intensively

used in combat than other Russian attack helicopters, as it brings good night-vision gear, which is rather lacking throughout the Russian Army. The fleet has suffered serious losses, however, to Ukrainian Starstreak (built by Thales) and Javelin (built by Lockheed Martin) missiles, which have been consistently defeating the aircraft's countermeasures (reporting by Bethany Dawson). Largely for this reason, Thales is restarting production of the Starstreak, after a decade dormant (reporting by Alistair MacDonald).

Standing off with standoff weapons indicates that the Russian Army is learning.

Even so, British Intelligence further reported just over a week ago that the Russian Army had added 20 aircraft to its group of attack helicopters in occupied Berdyansk, and equipped them with standoff missiles. This reinforced and rejuvenated force has been inflicting serious losses upon the Ukrainians (reporting by Matthew Luxmoore). Note that Berdyansk is about 100 kilometers from the front, out of range from Ukraine's Guided Multiple Launch Rocket System (GMLRS) missiles, built by Lockheed Martin, though easily within range of the helicopters.

Breaking through to the coast and closing the Crimean land bridge would partially solve the problem, as most of the peninsula could then be brought under Ukrainian missile attack. More pointedly, Berdyansk today would be within range of Lockheed's most excellent, but so-far withheld, Army Tactical Missile System (ATACMS) missiles. Attacking airfields with long-range missiles forces dispersion, with consequently longer flight times and challenging mobile logistics. That may be the future of battlefield aviation, but today it indicates another reason that the ATACMS should be immediately provided to the Ukrainians, if they are not already on the way.

The maneuver does provide evidence that the Russian Army is learning, or at least taking my public advice. My research note "[On Rotorcraft](#)" of 26 May 2023 noted the important opinions of Barno, Bensahel, and the others, but argued that military rotorcraft could provide much of the future of attack aviation over land, if provided with longer-range aircraft and standoff-range precision weapons. I just wish that the Ukrainians could be doing the same!

Other air arms are learning as well.

Other air arms have been coming to this conclusion as well, for some time now. As Major General Andrea Di Stasio, commander of Italian Army Aviation, recently told Tom Kingston of *Defense News*,

We need standoff, fire-and-forget armaments so the helicopter can acquire over-the-horizon ground targets without exposing itself. An armed helicopter will have difficulty overcoming well-run air defenses up close. We already have such weapons on Italy's A129 helicopters [built by Leonardo], and the U.S. is moving in this direction, having chosen the Spike NLOS to compensate for the limited-range Hellfire missile.

With its renewed focus on the long distances in the Western Pacific, the US Marine Corps has been lamenting of late its long reliance on the combination of Bell's AH-1Z Viper helicopter with Lockheed Martin's Hellfire missile. That matches an aircraft with a combat range of 230 kilometers with an eight-kilometer weapon. The Hellfire is being replaced in the Marine Corps by Lockheed Martin's Joint Air-to-Ground Missile (JAGM), but this is still but a 16-kilometer weapon. The US Army, however, has been taking a cue from the Israeli Air Force, and equipping some of its AH-64E Apache Guardian attack helicopters (built by Boeing) with Rafael's aforementioned Spike Non Line of Sight (NLOS). The Spike NLOS is a 150-pound weapon with a range of at least 40 kilometers, and a forthcoming version will fly to 50 kilometers. As of last June, Rafael and production partner Lockheed Martin had sold 450 to the Army (reporting by Jen Judson).

A full analysis of alternatives for the US Army's FARA could produce a very different result than presumed.

What the Army is currently lacking is a detailed analysis of alternatives (AoA) for its Future Attack and Reconnaissance Aircraft (FARA), which will presumably replace those AH-64s. Federal Congressman Rob Wittman of Virginia told Jen Judson of *Defense News* that the Army provided a "very robust" AoA for its Future Long Range Assault Aircraft (FLRAA) in 2019. The Army ultimately chose Bell Helicopter's V-280 Valor tilt-rotor as its FLRAA; the alternative was Sikorsky and Boeing's Defiant compound-coaxial helicopter. Just getting to that competition was a rejection of what James Kurth called the "follow-on imperative" common in military procurement. Choosing another large, standard Sikorsky would have been easy, but the Army's top management knew that would not suffice in fighting China in the Western Pacific.

A serious AoA could address two questions which would discomfit the Army's aviation officers: the advisability of one-for-one replacement of conventional helicopters as direct-attack machines, and the feasibility of penetrating reconnaissance by manned aircraft. The record of the Russo-Ukrainian War strongly suggests that the answer is mostly no to both. In future wars, most battlefield attack missions will be standoff runs from behind one's own forward lines, and reconnaissance will better be undertaken by legions of flying drones and orbiting satellites.

Skipping the analysis when considering new concepts is inadvisable. That is what got the US Navy its lamentable Littoral Combat Ship—a 3,500-ton underarmed speedboat whose mission arguably could be better accomplished with standoff precision weapons on helicopters. Today, looking askance at its short-range helicopters, the USMC can at least claim long experience in tilt-rotors, as the sponsoring and lead customer of Bell-Boeing's V-22 Osprey. Bell has at times over the years suggested ways to arm tilt-rotors, though at trade shows seemingly without gusto recently. However, for aviation forces substantially employing standoff weapons, hiding from long-range precision missiles themselves, and ranging long underpopulated fronts, range and carrying capacity may prove more important in the analysis than speed and agility. Technologists, industrialists, and investors should consider how these factors favor tilt-rotors over compound or coaxial machines in future developments for battlefield aviation.

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