



The Need for FARA

By Mike Hirschberg, VFS Executive Director



Last issue's Commentary, "Decision Time for FARA," highlighted the decisions the US Army needs to make on the key requirements for its Future Attack Reconnaissance Aircraft (FARA) — part of the Future Vertical Lift (FVL) family of systems.

The FARA program is currently building two competitive prototypes (CPs) that are arguably the most advanced and capable helicopters ever built. In order to meet the aggressive schedule laid out in 2018 to have aircraft flying in 2022, the two companies proposed the most capable CPs that could meet this timeline.

The US rotorcraft industry is now well-accustomed to creating advanced vertical flight designs that push the state of the art. The Joint Multi-Role (JMR) technology demonstrators — the Bell V-280 Valor and the Sikorsky-Boeing SB>1 — bolstered the Army's plans for a Future Long Range Assault Aircraft (FLRAA) and showed the capability of the American helicopter industry to develop next-generation rotorcraft.

The Army needs a survivable scout/attack helicopter to meet national objectives, and FARA is critical to the Army's mission. With the emergence of increasing foreign threats — namely the widespread proliferation of Chinese and Russian integrated air defense systems (IADS) — the Army accelerated its original plans for a scout/attack version of FVL by a half-decade, challenging industry to develop and field two leap-ahead, fifth-generation rotorcraft in parallel, both with a first unit equipped (FUE) date of fiscal 2030.

Industry and the government have proven their ability to rise to the challenge. In addition, the three FVL companies — Bell, Boeing and Sikorsky — have collectively invested more than \$1B in support of FVL.

FARA Is Not F-35

BreakingDefense.com published a commentary on Oct. 15 entitled, "FARA Farce: What The Army Didn't Learn From The F-35," by Bill Greenwalt, the 2006–2009 Deputy Undersecretary of Defense for Industrial Policy. Greenwalt lambasts the Joint Strike Fighter (JSF) program for "moving the F-35 to production years before it was ever flight tested. That decision sentenced the program to a plague of cost, schedule and performance problems."

Accusing the FARA program of the same "acquisition malpractice," Greenwalt calls for "Congress to step in and either defund the program altogether or put money into the innovations that managed to spring from a disturbingly flawed acquisition process." It's not clear what motivated Greenwalt to write such an over-the-top opinion piece, but he is profoundly wrong. The FARA program is fundamentally sound and making extraordinary progress on schedule.

A look at the program structure for FARA shows few similarities with the F-35. FARA is a single helicopter that must perform an Army scout/attack mission, while the F-35 has three different configurations and many divergent missions, including air-to-air combat and air-to-ground attack. The F-35 also has significant advanced technology stealth features, and the overall configuration was driven by the US Marine Corps and UK requirements for a supersonic short takeoff and vertical landing (STOVL) capability — something that had never been done before, despite a half-century of unsuccessful attempts. To an aerospace technologist, there is no comparison between the two programs in terms of technical risk. I should know; I worked for the JSF Program Office as a propulsion system engineer and analyst from 1995–2001.

Unlike JSF, both FARA competitors are building CPs similar to proven designs. Bell's 360 Invictus bears a physical resemblance to the Boeing-Sikorsky RAH-66 Comanche, and is not that far removed from its own AH-1 Cobra helicopter that the company has been producing for more than a half century. The Sikorsky Raider X is a slightly larger version of its S-97 Raider, which has been flying since 2015. This is a far cry from the JSF program that pioneered the world's first lift fan propulsion system, plus three F-35 variants with markedly different airframes (which, by the way, are now in service with the US Air Force, Navy and Marines, as well as in use or on order by a dozen other countries).

Furthermore, the structure of the FARA program is hardly similar to JSF. The X-35 was a technology demonstrator to prove the potential for the eventual F-35 Engineering and Manufacturing Development (EMD) aircraft, which then began to finalize the details (against shifting program requirements) for a production configuration.

In contrast, the FARA CPs are much closer to the planned production configuration, and the FARA contracts require traceability of every component in the prototype aircraft to the full-scale production aircraft to assure adequate understanding of the entry into production. In fact, one of the important competitive criteria is the precision with which each manufacturer can trace its prototype's configuration of the final production aircraft, a requirement that significantly reduces the production risk. This is in no way similar to the X-Plane flyoff in the JSF program.

As discussed in the last issue, Army FARA program manager Col. Greg Fortier described the original FARA design goals as not compatible with the laws of physics — but later noted that he never used the word "requirements" to describe what the Army wanted. Rather the Army's desired "attributes" require trades, like all aircraft development efforts. Industry and Army experts are carefully weighing the mix of attributes to balance and trim them to achieve the great combat capability in practical and world-class designs. The balance

will create a very capable combat air vehicle, unmatched among combat helicopters around the world.

Greenwalt also alleges that with the FARA selections, the Army left advanced technology on the table. This is simply untrue; both aircraft have significant technological innovations within the bounds of acceptable risk. The high-speed Sikorsky Raider X is unlike any other machine yet in any military inventory, with unmatched agility, speed, maneuverability and payload attributes. Similarly, the Bell Invictus is a winged helicopter with high-technology rotors and systems that put it in a class by itself — again unmatched by any other operational rotorcraft.

FARA Is Not Your Father's Helicopter

In the 1970s and early 1980s, the Army ran two parallel helicopter development programs that resulted in the UH-60A Black Hawk and the AH-64A Apache, which were both revolutionary for their time. While FLRAA is clearly a replacement for the Black Hawk, FARA is a high-technology scouting complement for the Apache and other Army attack systems.

In 1988, General Motors' Oldsmobile brand introduced its new generation of cars with the tagline, "This is not your father's Oldsmobile." Similarly, the FARA is not just a better Kiowa or a better Cobra; it's an aggressive, low-cost approach to field the world's most capable helicopter to the warfighter in less than 12 years from concept to first unit equipped — half the

time of nearly any other recent military aircraft development program. It's not just a better helicopter; it's more survivable, maintainable, connected, aware and upgradeable — the FVL modular open systems approach (MOSA) enables the Army to update quickly and inexpensively to stay ahead of threats.

In an interview with DefenseNews.com in August, Fortier noted that "The ability to mature weapons system design and clearly articulate the trade space before the EMD program begins reduces schedule and technical risk while optimizing performance. While physics and flight test always yield challenges that require adjustments to design and or components, we have an unparalleled three-year opportunity before us to obtain a clear and informed view of the weapon system, well before it becomes a program of record. This significantly reduces the often-late discovery of requirements misalignment and allows for cost-effective implementation of adjustments that are well within schedule constraints."

The companies are well on their way to first flight next year, with each demonstrator about 60% complete, as of early October. Flight testing of the CPs will be completed prior to the Milestone B decision to enter into EMD. As industry continues to execute — as it has shown it is capable over the past decade of FVL developments — the Army will field a high-tech attack/reconnaissance rotorcraft in record time.

What do you think? Let me know at director@vtol.org.



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