



FVL — The Affordable Solution

By Mike Hirschberg, Executive Director



With the start of the new year, the pressure of two unexpected crises gripped Washington — record inflation and unchecked Russian aggression against Ukraine.

Simultaneously, the two US Army Future Vertical Lift (FVL) programs — the Future Long Range Assault Aircraft (FLRAA) and the Future Armed Reconnaissance Aircraft (FARA) — continued to make impressive progress towards their goals (see “FVL: Protected Across Domains,” pg. 26).

Revolutionary Capabilities

The first FARA competitive prototypes — the Bell 360 Invictus and the Sikorsky Raider X — are nearing completion in preparation for their first flights next year.

Meanwhile, the Joint Multi-Role Technology Demonstrators (JMR TD) for the FLRAA acquisition program — initiated with the first industry contracts in 2011 — have conclusively proven that revolutionary performance and affordability can be part-and-parcel of the next-generation rotorcraft being developed under FVL.

The two companies are taking different technology approaches to their efforts. The Bell V-280 Valor is an advanced tiltrotor aircraft that converts from vertical to horizontal flight by rotating its proprotors from vertical lift — like a helicopter’s rotors — to the horizontal, like conventional aircraft propellers, for high speed. The Sikorsky-Boeing SB-1 Defiant is an advanced compound helicopter using twin coaxial rotors to provide lift and a pusher propeller for high speed. Both aircraft have verified that the designs meet the Army’s key performance parameters through extensive testing campaigns.

The Defiant and Valor technology demonstrators for the FLRAA acquisition program have proven the potential for next-generation rotorcraft to leap far beyond current tools for the warfighter, and far beyond anything else available in the world. In addition to speed and maneuverability, the long range for FLRAA will serve the US and allied nations to counter hostilities at extreme distances and high altitudes that are denied to current Army helicopters, a key capability gap during the war in Afghanistan.

Perhaps more important than overcoming the “tyranny of distance” in the Eastern European and Asia-Pacific regions, however, is the affordability baked into the designs. The Defiant and Valor demonstrators proved that modern design and manufacturing advances will make a step-change improvement in both capability and affordability. With huge reductions in parts counts, lower-cost materials and manufacturing methods, and 3D-modeling tools for digital designs and virtual-reality maintenance simulators, individual aircraft production and maintenance costs will be substantially lower than the current fleet on an aircraft-weight basis. Even more significant is the fact that the FLRAA aircraft are capable of not only self-deploying, but also flying long distances directly to the fight — without the need to set up vulnerable and costly forward arming and refueling points (FARPs) or repeated air-to-air refuelings — reducing the time to arrive in theater by hours, days or even weeks.

Despite a highly constrained defense budget environment, the challenges of near-peer competitors are greater now than at any time since the end of the Cold War. Today’s inflation woes are almost certainly a temporary blip. However, any funding disruption to the FLRAA and FARA programs now will be a long-term threat to the security of the US and its allies, a threat put into sharp focus due to Russia’s increasingly bellicose activities.

As the nation’s leaders struggle with tough decisions for budget priorities, rotorcraft modernization efforts are essential to preserve. FVL is the affordable and low-risk acquisition solution for the US Army, based on the JMR TD and extensive design and testing over a decade — which has significantly burned down risk.

Whereas today’s helicopters will have significant difficulties in deploying across vast distances that may be necessary in future conflicts, FLRAA will field advanced rotorcraft that can fly to the area of operations and quickly be ready to fight as an integral part of a multi-domain force.

Revolutionary Affordability

The Army can’t afford not to invest in FVL — these programs have momentum, are performing well and must be seen through. The United States is in a constant state of competition with its peer and near-peer competitors, regardless of current budgets, and the cost of inaction is high.

Industry has invested heavily to compete in FVL — estimated at some \$1.5B over the past decade — and the Army has seen incredible levels of rapid technology maturation and risk reduction as a result. The time is now to capitalize on FVL. The concentration of effort, the proven configurations, the technical advancements — much of that will be lost if the programs are delayed. Delays will increase risk and cost to the nation.

In addition, the enduring fleet has reached its limits in performance and cannot match FVL platforms for integration of new technology. The innovations offered by the modular open system approach (MOSA), as well as the company systems integration labs (SILs) and the digital environment offer increased speed to integrate and field this transformational capability.

More than 400 rotorcraft and 600 American lives were lost in that first decade of military operations in Afghanistan and Iraq due to shootdowns and accidents at high altitudes, hot temperatures and in dusty visual environments. This horrific loss of blood and treasure must never be repeated. FVL promises not only the aircraft performance and sensor fusion to avoid accidents, but unprecedented survivability and operational flexibility to operate in increasingly hostile threat environments.

FVL is also good for the entire rotorcraft industrial base — even those companies who are not directly involved, as it shows the possibilities of next-generation rotorcraft. Would Leonardo and Airbus be developing advanced, high-speed rotorcraft

demonstrators focused on affordability and sustainability for the European Union's Clean Sky 2 initiative if FVL had never existed? Perhaps not.

An Unpredictable Future

FVL is a smart investment ready to deliver game-changing capability for warfighters with room for future improvements, without breaking the budget. Cancellations of previous Army rotorcraft acquisition programs significantly impacted Army Aviation, and a major disruption in the FVL development programs would be devastating to the US industrial base and future combat capabilities.

The national security objectives of the US and its allies are threatened by ever-increasing unpredictability. FVL is transformational, the development efforts are making impressive progress, and it's a national security priority we simply can't afford to lose.

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



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