Manager, Advanced Development Programs, Lockheed Martin Corporation (retired)

For the conception and demonstration of the multi-cycle propulsion system and other technologies enabling the production of the F-35 supersonic V/STOL Strike Fighters.

Lockheed Martin won the Joint Strike Fighter competition when the X-35 demonstrator aircraft made a short takeoff, flew supersonic, and then landed vertically, the first time any aircraft had accomplished this feat. This was made possible by its innovative multi-cycle propulsion system, invented by Paul Bevilaqua.

Paul M. Bevilaqua

Bevilaqua has spent his career making key theoretical contributions as well as practical innovations in V/STOL aircraft design. He earned a B.S. in Aerospace Engineering at the University of Notre Dame and an M.S. and a Ph.D. in Aeronautics and Astronautics at Purdue University. His study of turbulent wakes identified the importance of the dominant vortices shed from the body on the development of the wake.

As a U.S. Air Force officer at Wright-Patterson Air Force Base, he worked on the turbulent jets from a V/STOL Search and Rescue aircraft. His research was actually incorporated into a VTOL interceptor aircraft being developed for the U.S. Navy's Sea Control Ship. Bevilaqua accepted an offer to become Manager of Advanced Programs at Rockwell International's Navy aircraft plant, where this aircraft was being developed.

When this ship program was cancelled, Bevilaqua was hired as Chief Aeronautical Scientist at the Skunk Works. DARPA subsequently approached him about adapting the Navy interceptor as a supersonic V/STOL strike fighter to replace both the Harrier and Hornet. He proposed the multi-cycle propulsion system, which can be switched from a turbofan cycle to a lift fan cycle for V/STOL performance. He also suggested developing a variant with a conventional engine to replace the F-16 Falcon.

Bevilaqua then led the team that demonstrated the feasibility of developing variants of this aircraft for all three military services.