Pratt & Whitney Awarded Contract for F135 Engine Modernization Study

An F135-PW-100 engine, which powers the F-35 Joint Strike Fighter, undergoes salt water corrosion testing in the Arnold Engineering Development Complex SL-3 facility at Arnold Air Force Base, Tennessee, in 2016. U.S. Air Force / Christopher D. Rogers

EAST HARTFORD, Conn. – Pratt & Whitney, a division of Raytheon Technologies Corp., has been awarded a $1.5M contract to conduct an F135 modernization study and operational assessment by the F-35 Joint Program Office to determine specific propulsion system growth requirements for Block 4.2 F-35 aircraft and beyond, the company said in an Oct. 20 release. The study is expected to conclude in March 2021.

“This award is a significant milestone for the program and the warfighter, as we look to ensure the F135 propulsion system continues to provide the foundation for all air vehicle capability requirements over the full lifecycle of the F-35,” said Matthew Bromberg, president, Pratt & Whitney Military Engines. “As we look to the future, growth in aircraft capability must be met with matched propulsion modernization. Fortunately, the F135 has ample design margin to support agile and affordable upgrades that will enable all F-35 operators to keep pace with evolving threat environments.”

Under this award, Pratt & Whitney will assess F135 engine enhancements required to support future F-35 weapon system capability requirements across all F-35 variants beginning with Block 4.2 aircraft. The scope of the assessment focuses on enhancements addressing improvements to up and away thrust, powered lift thrust, power and thermal management capacity, and fuel burn reduction.

Designed with the knowledge that operational environments will evolve and threats will advance, the F135 is postured to meet future F-35 capability requirements. Its modular design and advanced digital architecture allow for the agile development and spiral insertion of both hardware and software upgrades. As part of the study, Pratt & Whitney's GATORWORKS organization will complete the conceptual design and analysis of multiple F135 Engine Enhancement Package (EEP) growth options with phased insertion plans.

Leveraging significant U.S. Government and Pratt & Whitney investment in next generation adaptive propulsion technologies, Pratt & Whitney's EEP approach offers low risk, variant-common upgrade options for the F135 that provide increased performance aligned with the program's continuous capability development and delivery strategy and serve as a critical enabler for future capability growth of the F-35 weapon system.

The combat-proven F135 is the most advanced operational fighter engine in the world, delivering 26% more thrust, 116% more powered lift, and more than a 300% increase in power and thermal management over 4th generation fighter engines – all with a demonstrated mission capability rate of greater than 94%.

"Built upon decades of combat propulsion experience, the F135 provides the warfighter with a critical technological advantage over adversaries at an unparalleled value to the taxpayer," said Bromberg. "With more than 40,000 pounds of thrust, unmatched low-observable signature, world-class thermal management, and innovative engine control system, the F135 is a critical enabler of the F-35 weapons system and of operations conducted in advanced threat environments – a core element of the National Defense Strategy."