Boeing Super Hornet Completes One Lifetime of Fatigue Testing

The F/A-18E/F successfully reached another development milestone when the full-scale fatigue test airframe (FT50) completed its first lifetime of testing in the Boeing St. Louis laboratories. One lifetime of fatigue testing is the equivalent of 6,000 flight hours, or about 20 years of operational use.

FT50 is a structurally complete airframe, minus the internal subsystems; it was built to demonstrate the strength and durability of the Super Hornet. Fatigue testing simulates the variety of conditions that the Super Hornet will be exposed to during operations - everything from flight maneuvers to carrier-based landings. To simulate these conditions, 176 hydraulic actuators applied 2.69 million load variations to the airframe during the course of testing. The FT50 team collected continuous data from more than 1,500 data channels - an unprecedented amount.

Fatigue cycling on FT50 began June 30, 1997, and reached the one-lifetime milestone one month earlier than scheduled. During testing, laboratory engineers increased the fatigue cycling rate which reduced total cycling time, and offset down times for FT50 configuration updates and unplanned repairs.

"Our teams did a tremendous job of completing this important milestone ahead of schedule," said Jim Young, division director for F/A-18 Program Engineering.

Completion of the first lifetime is an exit criterion for Navy Program Review III, which is scheduled for November. Full funding for the third lot of low-rate initial production aircraft is contingent on the successful completion of this Navy program review.

Fatigue testing provides design engineers with critical information used to determine the likelihood and causes of premature fatigue damage or wear on the aircraft's structural components.

A comprehensive inspection of FT50 has been completed, and the first lifetime test data is being analyzed. FT50 will now undergo a series of configuration updates prior to beginning its second lifetime of testing in January 1999. The second lifetime of testing is scheduled to be complete in November 1999.

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