

F/A-18 Infrared Search and Track Block II

Operational testing of the F/A-18 Infrared Search and Track (IRST) Block II, originally planned for 1QFY21, was delayed until at least 2QFY23 due to hardware and software delays. The IRST Block II program needs to resolve several open deficiencies from previous IRST versions, as well as those discovered during Block II developmental testing with prototype systems, to be operationally effective. The late delivery of production-representative software could negatively affect suitability during IOT&E. The proposed schedule allows minimal time for problem discovery and deficiency resolution prior to the planned start of IOT&E.



System Description

The ASG-34A(V)1 F/A-18E/F IRST is a centerline-mounted store consisting of a long-wave infrared sensor that provides a passive fire control system intended to search, detect, track, and engage airborne targets at long range. The IRST is intended to act as a complementary sensor to the AN/APG-79 fire control radar in a heavy electronic attack or radar-denied environment. It is designed to operate autonomously, or in combination with other sensors, to support the guidance of beyond-visual-range air-to-air missiles, including the AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM) and AIM-9X Sidewinder Block II.

Program

The F/A-18 IRST Block II is an Acquisition Category IC program intended to field the IRST Block II system to carrier-based F/A-18E/F Super Hornet squadrons to improve lethality and survivability in air superiority missions against advanced threats. DOT&E approved the Milestone C Test and Evaluation Master Plan in May 2021. IOT&E is scheduled to begin in 2QFY23 in support of the full-rate production decision scheduled for August 2023.

Major Contractors

Lockheed Martin Missiles and Fire Control – Orlando, Florida. Boeing Defense – St. Louis, Missouri.

Test Adequacy

The Navy plans to conduct IOT&E between January and May 2023 and has not yet provided the IOT&E plan to DOT&E for approval.

In August 2021, the Navy simultaneously executed developmental test events involving F/A-18E/F System Configuration Set H16, IRST Block II, and E-2D with Delta System Software Configuration 4 software during a Gray Flag exercise detachment at Naval Air Station Point Mugu, California. This system-of-systems approach is likely to maximize the effectiveness and efficiency of future operational test events, once IRST Block II hardware issues are addressed and system software is mature and stable.

Performance

Effectiveness

The IRST Block II program needs to resolve several open deficiencies from previous IRST versions, as well as those discovered during Block II developmental test with prototype systems, to be operationally effective. Additionally, the Navy must improve the Super Hornet's operating software and correct existing deficiencies to enable IRST to be an effective contributor to aircraft fire control solutions. The IRST Block II prototype pod demonstrated tactically relevant detection ranges against operationally relevant targets during initial developmental test events. However, the Navy is still developing the IRST and F/A-18E/F software to be able to translate these long-range target detections into stable system tracks that facilitate weapons employment. The Navy continues to discover and fix deficiencies as the program progresses through developmental test. The ability of the Navy and the contractor to fix the critical issues on schedule is the most significant risk to a successful IOT&E.

Suitability

The prototype IRST Block II systems currently being utilized in developmental test are demonstrating reliability well below the Navy's requirements. Additionally, the prototype systems do not possess complete Built-in-Test functionality, which makes fault detection and troubleshooting difficult for maintainers and aircrew. The production-representative versions of the system slated for use in IOT&E are scheduled to arrive in April 2022, with planned IOT&E software delivery occurring two months prior to IOT&E start. Although this revised schedule provides additional opportunity for maintenance process maturity and reliability growth than originally planned, the late delivery of production-representative software could negatively affect suitability during IOT&E.

Survivability

The IRST Block II is intended to contribute to the survivability of the F/A-18E/F by providing target tracks in a contested and congested electromagnetic spectrum environment. This capability remains, however, untested in an operationally representative environment.

The survivability of the IRST Block II in a cyber-contested environment will be evaluated as part of IOT&E.

Recommendation

1. The Navy should address the known IRST Block II and Super Hornet hardware and operating software deficiencies and continue to test unproven capabilities in developmental testing to prepare the system for IOT&E and adequately demonstrate its operational effectiveness, suitability, and survivability.