F/A-18 Infrared Search and Track (IRST) Block II

F/A-18 Infrared Search and Track (IRST) Block II completed operational testing in 4QFY24. Data analysis is ongoing, but operational test events were adversely affected by IRST Block II system reliability failures. The Navy conducted operational testing with Infrared Optimized Configuration (IROC) pods, which are an operationally equivalent pod designated for flight test. Low-Rate Initial Production (LRIP) pods, which may have increased reliability, are expected to deliver in September 2024. Test details for the IROC pods will be available in DOT&E's classified IOT&E report due out in 2QFY25.

SYSTEM DESCRIPTION

The ASG-34A(V)1 F/A-18E/F IRST is a centerline-mounted pod with 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 sensor assembly integrates onto the front of the redesigned FPU-13/A centerline fuel tank assembly.

The fuel capacity of the FPU-13/A is 340 gallons compared to the 480-gallon FPU-12/A centerline fuel tank it replaces. The IRST acts as a complementary sensor to the aircraft's AN/APG-79 fire control radar in a heavy electronic attack or radar-denied environment. It operates autonomously, or in combination with other sensors, to support the guidance of beyond-visual-range air-to-air missiles.

MISSION

The F/A-18E/F Super Hornet will employ the IRST Block II as a complementary long-wave infrared sensor to the AN/APG-79 fire control radar in a heavy electronic attack or radar-denied environment. IRST Block II provides passive search, detect, track, and engage capabilities against airborne targets at long range and will support the guidance of beyond-visual-range

air-to-air missiles, including the AIM-120 Advanced Medium-Range Air-to-Air Missile and AIM-9X Sidewinder Block II.

PROGRAM

The F/A-18 IRST Block II is an Acquisition Category IC program. DOT&E approved the Milestone C TEMP in May 2021, and the IOT&E test plan in March 2024. The Navy conducted developmental testing during FY23 and FY24, and IOT&E was conducted in FY24 in support of full-rate production. The Navy conducted operational testing with IROC pods, which are operationally equivalent pods designated for flight test. The Navy intends to field the IRST Block II LRIP pods, which may have increased reliability, to carrier-based F/A-18E/F Super Hornet squadrons in 1QFY25 to improve lethality and survivability in air superiority missions against advanced threats. IROC pods will not be released to the fleet and were only intended for developmental and operational testing.

» MAJOR CONTRACTORS

- Lockheed Martin Corporation – Orlando, Florida
- Boeing Defense, Space & Security – St. Louis, Missouri

TEST ADEQUACY

The Navy executed IOT&E between April and September 2024. Testing was conducted in accordance with DOT&E-approved test plans and observed by DOT&E. IOT&E, which included integrated test events conducted with instrumented aircraft from the developmental test squadron, was adequate to provide an assessment of the long-range detection and tracking capability, suitability, and cyber survivability of the IRST Block II pod. IOT&E data analysis is currently ongoing. Once complete, DOT&E will publish a classified IOT&E report, expected in FY25.

PERFORMANCE

» EFFECTIVENESS

IRST Block II operational flight test events demonstrated tactically relevant detection ranges against operationally relevant targets and the ability to translate these long-range target detections into stable system tracks to facilitate weapons employment. The Navy must continue to improve the F/A-18 E/F Super Hornet's operating software and address existing deficiencies to effectively integrate IRST into aircraft fire control solutions. Additional details will be provided in DOT&E's classified IOT&E report.

» SUITABILITY

IRST Block II demonstrated significant reliability problems during operational testing. Throughout the test period, IRST Block II suffered from hardware and software deficiencies, which required the aircrew to restart the pod multiple times. Troubleshooting and repair often exceeded the abilities of Navy maintenance crews and required assistance from Lockheed Martin. Many of these problems were discovered during integrated and operational test after the Navy completed a minimal developmental test program with the representative hardware. Additional details will be provided in DOT&E's classified IOT&E report.

» SURVIVABILITY

IRST Block II contributes to the survivability of the F/A-18E/F by providing target tracks in a contested and congested electromagnetic spectrum environments. Cyber survivability testing was conducted 1QFY24. Additional details will be provided in DOT&E's classified IOT&E report.

RECOMMENDATIONS

The Navy should:

1. Continue to address the known IRST Block II and Super Hornet operating software deficiencies as recommended in the FY23 Annual Report.
2. Continue to address the reliability deficiencies of IRST Block II.
3. Implement the recommendations in DOT&E's classified IRST Block II IOT&E report, after it is published in 2QFY25.