

F/A-18E/F Super Hornet and EA-18G Growler



Both the F/A-18E/F Super Hornet and EA-18G Growler programs continue to experience development challenges in the latest software configuration set (SCS) updates. The Navy stopped SCS H16 operational testing during 4QFY22 due to severe software deficiencies, but still fielded the system to the operational fleet in FY23 without completing the DOT&E-approved FOT&E test plan. The Navy completed integrated test events for SCS H18, which provided relevant findings, but no significant data were provided. The Navy did not conduct SCS H18 FOT&E as planned in FY23. In March 2023, the Navy decided to test and issue SCS H18 in three releases. Release 1 was released to the fleet in April 2023 without conducting operational test events. The Navy fielded SCS H18 Release 1 prior to conducting FOT&E to support Long Range Anti-Ship Missile (LRASM) 1.1 capabilities. DOT&E provided early fielding reports (EFRs) for SCS H16 and H18 in response to the Navy's fielding decisions. In August 2023, the Navy conducted an operational test readiness review (OTRR) for SCS H18 Release 2, which is designed to enable Next-Generation Jammer–Mid Band capability in the EA-18G Growler, but it was not approved to conduct FOT&E due to severe software deficiencies. SCS H18 Release 3 is scheduled for OTRR and FOT&E in 3QFY24.

SYSTEM DESCRIPTION

The F/A-18E/F Super Hornet is a twin-engine, supersonic, all-weather, carrier-capable, multirole combat aircraft

performing a variety of roles, including air superiority, fighter escort, suppression of enemy air defenses, reconnaissance, forward air control, close and deep air support, day and night strike, and aerial refueling. The F/A-18E/F Super Hornet is the replacement

for the F/A-18A through D and the F-14, and it complements the F-35C in a carrier environment. The F/A-18E/F Block III Super Hornet aircraft leverages ongoing production of the Kuwaiti Super Hornet; it is also available as a Block II aircraft retrofit. F/A-

18E/F Block III Super Hornets include upgraded hardware, advanced cockpit displays, and improved networking capability.

The EA-18G Growler is a two-seat, electronic attack variant of the F/A-18E/F Super Hornet that can provide standoff, escort, and self-protection jamming using both noise and deception techniques against land/surface-based and airborne radar systems. The EA-18G Growler carries up to five AN/ALQ-99 tactical jammer system pods mounted under the wings and fuselage, which integrate with the internal AN/ALQ-218 electronic warfare (EW) system for detection and jamming. The EA-18G Growler also employs AGM-88 High-Speed Anti-Radiation Missile/Advanced Anti-Radiation Guided Missile for suppression of enemy air defenses and the AIM-120 Advanced Medium-Range Air-to-Air Missile for self-protection. The Navy is currently testing the ALQ-249 Next Generation Jammer – Mid Band (NGJ-MB) on the EA-18G Growler to eventually replace the ALQ-99.

The F/A-18E/F Super Hornet and EA-18G Growler are both supported by the same SCS product line. The currently fielded SCS for both aircraft is a mix of SCS H14, H16, and the most recent H18. SCS H18 brings improved capabilities to the APG-79 radar for both aircraft, integrates with EA-18G Growler capability modifications such as ALQ-249 and brings EW and radar software improvements to the F/A-18E/F Super Hornet, along with new weapons integration.

MISSION

Combatant commanders use the F/A-18E/F Super Hornet to conduct offensive and defensive counter-air combat missions, and attack both ground-based and maritime targets with precision and non-precision weapons. The F/A-18E/F Super Hornet can also carry a pod to provide organic aerial refueling capability to the carrier strike group.

The EA-18G Growler can operate forward deployed from expeditionary land bases or as part of a carrier air wing. It is employed as an embedded airborne Electronic Attack platform, organic to the carrier strike group or integrated in the Joint Force. It can also be used in a tactical reconnaissance role.

PROGRAM

The F/A-18 Super Hornet and EA-18G Growler now share the same acquisition strategy for SCS H18. The F/A-18E/F Super Hornet is an Acquisition Category IC program and the EA-18G Growler is an Acquisition Category ID program. Urgent fleet capability needs are driving the Navy's acquisition strategy for tactical aircraft SCS.

In the FY22 Annual Report, DOT&E stated that the Navy was conducting SCS H16 operational testing. Due to severe software deficiencies, operational testing of SCS H16 stopped, and the Navy began to develop urgent F/A-18E/F and EA-18G SCS capabilities for follow-on SCS releases. Although

the program completed two more SCS H16 integrated test events to prove system stability, the Navy still fielded SCS H16 in FY23 without completing FOT&E per the DOT&E-approved Test and Evaluation Master Plan (TEMP) and the FOT&E test plan. DOT&E published an SCS H16 EFR in response to the Navy's fielding decision in September 2023.

In the FY22 Annual Report, DOT&E stated that SCS H18 FOT&E was scheduled to begin during 3QFY23, but system deficiencies caused program delays. The Navy's acquisition strategy for SCS H18 is an incremental three-part test-and-release plan to support the urgent fleet needs for the LRASM 1.1 on the F/A-18E/F Super Hornet and NGJ-MB on the EA-18G Growler. In February 2023, the Navy completed integrated test events for SCS H18 Release 1, but no significant data were generated for DOT&E assessment. In April 2023, the Navy fielded SCS H18 Release 1 to support LRASM 1.1 fielding without a DOT&E-approved TEMP, FOT&E test plan, and without conducting operational test events. In August 2023, DOT&E provided an SCS H18 Release 1 EFR in response to the Navy's fielding decision. DOT&E received and approved the SCS H18 TEMP in June 2023. DOT&E has not yet approved an SCS H18 operational test plan for Release 2 due to concerns about severe system deficiencies that will affect operational test adequacy. The Navy plans to test and field SCS H18 Release 3 in FY24.

SCS H18 includes EW and radar enhancements from SCS H16,

along with weapons integration software for LRASM 1.1, Small Diameter Bomb II, Advanced Anti-Radiation Guided Missile-Extended Range, and Joint Advanced Tactical Missile for the F/A-18E/F Super Hornet.

» MAJOR CONTRACTORS

- Boeing Defense, Space & Security – St. Louis, Missouri
- Raytheon, a subsidiary of RTX (formerly Raytheon Technologies) – Forest, Mississippi
- GE Aerospace, a subsidiary of General Electric – Evendale, Ohio
- Northrop Grumman Aeronautics Systems – Bethpage, New York
- Lockheed Martin Missiles and Fire Control – Orlando, Florida

TEST ADEQUACY

SCS H16 operational testing with the F/A-18E/F Super Hornet and EA-18G Growler was inadequate. The DOT&E-approved operational test plan was not completed prior to fielding the system in FY23; therefore, DOT&E was unable to assess the operational effectiveness, suitability, and survivability of SCS H16.

SCS H18 Release 1 operational testing was also inadequate. The program submitted a limited scope TEMP in January 2023, which DOT&E did not approve

because it did not outline the overall H18 test strategy. DOT&E received and approved an updated TEMP in June 2023, but the Navy had already fielded SCS H18 Release 1 after conducting integrated test events. The Navy fielded Release 1 to operational fleet squadrons in April 2023 without a DOT&E-approved TEMP, FOT&E test plan, or conducting dedicated operational testing.

The F/A-18E/F Super Hornet and EA-18G Growler programs conducted an OTRR in August 2023 for SCS H18 Release 2. The OTRR revealed severe system deficiencies that could impact operational test adequacy and DOT&E did not approve the program to conduct FOT&E. The Navy completed several SCS H18 Release 2 integrated test events in August 2023 after DOT&E required the program to correct the severe system deficiencies and conduct a Delta-OTRR to show system maturity for FOT&E approval. However, the Delta-OTRR was not conducted and SCS H18 FOT&E was not conducted during FY23. The Navy plans to make the SCS H18 Release 2 fielding decision in October 2023.

The Navy plans to test and field SCS H18 Release 3 during FY24 as part of the incremental release plan. DOT&E received an FOT&E test plan for Release 3 but did not approve the test plan due to the same severe system deficiencies affecting previous SCS versions that could affect test adequacy. The program intends to conduct

an H18 Release 3 OTRR in FY24 as the system matures.

The Navy has not yet submitted an H18 cyber survivability test plan to DOT&E.

PERFORMANCE

» EFFECTIVENESS, SUITABILITY, AND SURVIVABILITY

The Navy did not complete the DOT&E-approved SCS H16 FOT&E test plan and operational test data were not provided to DOT&E. Therefore, DOT&E did not assess SCS H16 effectiveness, suitability or survivability for the F/A-18E/F or EA-18G in FY23 as planned.

Although the program did complete integrated test events for SCS H18 Release 1, no significant data was generated for analysis and SCS H18 Release 1 FOT&E was not conducted. SCS H18 Release 2 OTRR revealed severe system deficiencies that could impact operational test adequacy as an outcome. DOT&E did not approve the program to conduct FOT&E, but the Navy did conduct integrated test events for SCS H18 Release 2. No significant data were generated by the integrated test events for analysis; therefore, DOT&E will provide an assessment of SCS H18 operational effectiveness, suitability, and survivability at the conclusion of an approved SCS H18 Release 3 FOT&E.

RECOMMENDATIONS

The Navy should:

1. Cease fielding subsequent versions of SCS H18 until all severe deficiencies, which are a risk to adequate operational test, aircrew safety, and aircrew ability to perform assigned missions, are remedied.
2. Conduct an OTRR of SCS H18 after developmental testing verifies corrections to severe software deficiencies that may affect operational test.
3. Complete dedicated operational testing of SCS H18 to assess operational effectiveness, suitability, and survivability prior to fielding subsequent versions.
4. Submit an H18 cyber survivability test plan to DOT&E for approval.
5. Address the two recommendations from the FY22 DOT&E Annual Report that are still outstanding.
6. Improve the reliability of the APG-79 Active Electronically Scanned Array (AESA) radar, as recommended in the FY22 Annual Report.
7. Continue to incorporate Open Air Battle Shaping and high-fidelity AESA threat radar emulators into SCS H18 FOT&E.