

AIM-120 Advanced Medium-Range Air-to-Air Missile (AMRAAM)



The Advanced Medium-Range Air-to-Air Missile (AMRAAM) Air Intercept Missile (AIM)-120D3 System Improvement Program (SIP)-3F finished integrated testing in May 2023 and the fielding recommendation is pending Service-level approval as of 4QFY23. Test analysis is ongoing and will inform the FOT&E report planned for 1QFY24.

SYSTEM DESCRIPTION

The AMRAAM is a radar-guided, air-to-air missile with capability in both the beyond-visual-range and within-visual-range arenas. F-35A/B/C, F-22A, EA-18G, F/A-18C/D/E/F, F-16C/D, and F-15C/D/E aircraft can all employ AMRAAM, including multiple-target engagements with multiple missiles simultaneously. The AIM-120D3 is the newest variant in the AMRAAM family of missiles and incorporates a form-fit-function hardware refresh to replace obsolete components and re-hosts the SIP-3 operational flight software as SIP-3F. Multiple planned follow-on SIPs will provide updates to the AIM-120D3 to enhance missile performance and resolve previous deficiencies.

Additional software updates to the legacy AIM-120D variant are planned under the SIP-3 Tape X designation. These updates will enhance performance and resolve previous deficiencies for legacy AIM-120D hardware.

MISSION

The Air Force, Navy, and several foreign militaries employ various versions of the AIM-120 AMRAAM to conduct air-to-air combat missions. All U.S. fighter aircraft use the AMRAAM as their primary beyond-visual-range, air-to-air weapon.

PROGRAM

The AMRAAM SIP-3F upgrade is an Air Force-led project under the Acquisition Category IC AMRAAM program. DOT&E approved the SIP-3F test plan in June 2022. The Air Force and Navy completed SIP-3F integrated testing in May 2023, and fielding is pending Service-level approval. The Services are also in the process of operational test planning for the next set of AIM-120 updates: SIP-3 Tape 2 for AIM-120D and SIP-4 for AIM-120D3 variants. Operational testing on these upgrades is planned to begin in 4QFY24.

» MAJOR CONTRACTOR

- Raytheon, a subsidiary of RTX (formerly Raytheon Technology) – Tucson, Arizona

TEST ADEQUACY

In May 2023, the Air Force and Navy completed SIP-3F integrated testing in accordance with the DOT&E approved test plan and DOT&E observed the testing. Discoveries during testing led to multiple missile software and firmware changes. As a result of these changes, some of the early tests were not of the final production-representative version of the missile. Analysis is still ongoing and test adequacy, along with effectiveness and suitability will be included in the DOT&E classified test report expected in 1QFY24.

PERFORMANCE

» EFFECTIVENESS AND SUITABILITY

Details on SIP-3F operational effectiveness and suitability will be available in the classified DOT&E test report, expected in 1QFY24.

» LETHALITY

SIP-3F is lethal based on previous test results from SIP-3. Details are available in the classified SIP-3 test report of November 2022.

» SURVIVABILITY

SIP-3F cyber survivability is based on previous test results from SIP-3. Details are available in the classified SIP-3 test report of November 2022.

RECOMMENDATION

The Air Force should:

1. Review SIP-3F test results to determine if regression testing and/or additional missile shots are required prior to fielding due to software and firmware changes during testing.