HH-60W Jolly Green II

The Air Force Operational Test and Evaluation Center (AFOTEC) expects to complete IOT&E of the HH-60W in 1QFY23. DOT&E will publish a classified IOT&E report to inform a Full-Rate Production decision in 2QFY23. Developmental testing of capabilities deferred from IOT&E and other aircraft upgrades is proceeding in parallel with IOT&E.

SYSTEM DESCRIPTION

The Air Force HH-60W Jolly Green II is a new-build, dual-piloted, twin-engine helicopter that will replace the HH 60G. The aircraft is designed to extend the combat radius without aerial refueling, conduct an out of ground-effect hover at its mid-mission gross weight, and improve survivability.

MISSION

Commanders will employ units equipped with the HH-60W to:

- Recover isolated personnel from hostile or denied territory, day or night, in adverse weather, and in a variety of threat environments from terrorist to chemical, biological, radiological, and nuclear.
- Conduct humanitarian missions, civil search and rescue, disaster relief, medical evacuation, and non-combatant evacuation operations.

PROGRAM

HH-60W is an Acquisition Category IC program. DOT&E approved the LFT&E Strategy in April 2015 and the Milestone C Test and Evaluation Master Plan in January 2020. DOT&E approved the IOT&E plan, and AFOTEC started dedicated IOT&E in April 2022. AFOTEC expects to complete IOT&E in 1QFY23 after successful resolution of procedures for restricted visibility approaches and landings in degraded visual environments (DVE). The Air Force intends to conduct a Full-Rate Production decision in 2QFY23.

» MAJOR CONTRACTOR

- Sikorsky Aircraft Corporation, a Lockheed Martin Company – Stratford, Connecticut

TEST ADEQUACY

The program completed developmental test (DT) of the developmental aircraft software configuration in the first half of FY22 with regression testing of updates to the GAU-2 and GAU-21 weapon systems, aircraft defensive systems, the transponder, and navigation systems. The Air Force conducted open-air flight testing of the updated radar warning receiver and ALE-47 countermeasures dispensing system (CMDS) software to verify correction of deficiencies discovered in previous testing. This DT established a minimum operationally representative configuration to begin dedicated IOT&E. The next aircraft software configuration, including mission planning and GAU-18 weapon system updates, was deferred until after IOT&E. This configuration will be tested in the first of several future FOT&E periods. During DT, the Air Force continued data collection through participation and observation of 41st Rescue Squadron training exercises, collecting 40 percent of required data points prior to the start of dedicated IOT&E.

The Air Force conducted dedicated IOT&E starting in April 2022 in accordance with the DOT&E-approved test plan and observed by DOT&E. Testing focused on end-to-end mission accomplishment over 18 scenarios including open, confined, and mountain terrain; high and low altitude; water and shipboard operations; and a range of threats from small arms to radar-guided missiles. The Air Force was not able to conduct restricted visibility approaches and landings in DVE until September 2022 due to restrictions in the military flight release (MFR). The Air Force flew eight full-mission profiles to characterize aircraft performance in DVE when the MFR restrictions were removed. The Air Force conducted a successful demonstration of an operational CMDS sequence in August 2022 after the Air Force removed the MFR restriction.

The Air Force conducted several phases of cybersecurity assessment. The Program Office and 41st Rescue Squadron restricted some cyber testing on the aircraft due to insufficient hardware spares and software restoration capabilities, as mentioned in previous Annual Reports. Despite these restrictions, The Air Force's testing effort for this program represented a noteworthy advance in aircraft cybersecurity assessment.

The Air Force has completed all testing and analysis efforts described in the DOT&E-approved LFT&E Strategy. These tests and analyses evaluated aircraft system-level vulnerability, personnel force protection, and low-energy laser effects. The Air Force has conducted an integrated

survivability assessment against kinetic threats, directed-energy weapons, and electromagnetic pulses as well as chemical, biological, radiological, and nuclear threats, as summarized in the LFT&E Consolidated Report.

PERFORMANCE

» EFFECTIVENESS

The FY23 DOT&E classified IOT&E report will describe how the HH-60W demonstrated most of the capabilities required to recapitalize the legacy HH-60G fleet and support the personnel recovery mission. However, the HH-60W does not provide identical air indications as were available in the HH-60G to support reduced visibility and low-altitude tactical maneuvers. The program plans for upgrades in the next aircraft software configuration to provide improved navigation displays. Otherwise, pilots favorably rate most aspects of the automatic flight control systems and flight director. Crews indicate the intercom system requires improvements to enable effective communications, both external and internal to the aircraft. Datalinks enhanced the crews' ability to locate and communicate with isolated personnel, but the full datalink operability was not tested due to Federal Aviation Administration restrictions, which should be resolved in FY26. The Air Force is replacing the current Situational Awareness Data Link.

» SUITABILITY

The DOT&E report will show that the HH-60W is meeting most reliability and maintainability requirements. Availability and mission capable rate are below threshold, but these measures may have been strongly influenced by unit stand-up issues and delayed updates to defensive systems. Weapon boresight procedures are a significant constraint for maintenance personnel to generate alert aircraft in a deployed location. Deficiencies with the aircraft's alert systems (including maintenance and threat advisories) degraded aircrew situational awareness, and crews reported frequent computer resets. The off-board computer systems for diagnostics, mission planning, and post-mission debrief require usability improvements and better technical manuals. The program is developing an update to the off-board mission planning environment. Cabin aircrew made recommendations to the cabin configuration to better support their missions. Crews also reported ergonomic and usability concerns with the weapons and primary aircrew cabin seats.

» SURVIVABILITY

The Air Force is tracking several deficiencies that result in degraded crew situational awareness from threat warnings and indications on navigation displays during engagements. The program expects to improve threat display integration and missile warning system performance with software updates planned over the next several years. The program also plans to upgrade to a directional infrared countermeasures system.

All the testing and analysis efforts described in the DOT&E-approved LFT&E Strategy were completed. The LFT&E reports provide a detailed analysis of aircraft survivability. While the armor meets survivability and force protection requirements against the specification threat, the program needs to overcome several shortfalls. In addition, the test results of the new fuel system and aerial refueling system should be addressed.

RECOMMENDATIONS

The Air Force should:

1. Update the Test and Evaluation Master Plan with a timeline and resources to address key deficiencies identified in developmental and operational testing, as well as follow-on operational testing of software, weapons, and defensive system upgrades.
2. Address the various recommendations in the LFT&E reports for the cabin and cockpit armor, the fuel system, and the aerial refueling system.