HH-60W Jolly Green II

Executive Summary
- The HH-60W Program Office projects developmental test will complete by 2QFY21.
- The operationally representative versions of some key capabilities, such as hover symbology in degraded visual environments and survivability equipment threat definition files, will not be available until after the start of IOT&E.

System
- The HH-60W Jolly Green II is a new-build, dual-piloted, twin-engine rotary-wing aircraft, based on the Army UH-60M, to replace the Air Force HH-60G. The HH-60W will fly a combat radius of at least 195 nautical miles without aerial refueling and conduct an out-of-ground effect hover at its mid-mission gross weight.
- The HH-60W includes survivability enhancements intended to be equivalent to, or better than, the current HH-60G aircraft:
  - Cockpit and cabin armor, self-sealing fuel cells that do not suffer catastrophic damage from high-explosive incendiary rounds, and crew and passenger crashworthy seating
  - Two external mount gun systems with forward and side-firing crew-served weapons including the GAU-2B, GAU-18, and GAU-21
  - Aircraft survivability equipment including the AN/AAR-57(V)3 common missile warning system, the AN/ALE-47 countermeasures dispenser set, the AN/AVR-2B(V)1 laser detecting system, and the AN/APR-52(V)1 radar warning receiver (RWR)
  - An upturned exhaust system to reduce its infrared signature.

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 (CBRN).
  - Conduct humanitarian missions, civil search and rescue, disaster relief, medical evacuation, and non-combatant evacuation operations.

Major Contractor
Sikorsky Aircraft Corporation – Stratford, Connecticut

Activity
- In 1QFY20, Sikorsky delivered the sixth and seventh aircraft to support government developmental test.
- The HH-60W program expects to complete developmental testing in December 2020, a roughly 3-month delay. Avionics software regression testing contributed to the delay.
- The coronavirus (COVID-19) pandemic caused marginal delays in flight testing and travel to ranges, but the test team continued operations in alternating shifts at Duke Field, Florida.
- The Air Force conducted on-aircraft testing of the RWR in the Joint Preflight Integration of Munitions and Electronic Systems anechoic chamber from November 2019 to January 2020, and open-air range testing February to March 2020. Additional RWR testing is scheduled in 1QFY21 at the end of developmental testing.
- In March 2020, the Air Force conducted extreme weather testing on an aircraft in the McKinley Climate Lab at Eglin AFB, Florida, including rain, heat, and arctic conditions.
- The Air Force conducted electromagnetic environment testing at Naval Air Station Patuxent River, Maryland, from March to April 2020.
- The Air Force Operational Test and Evaluation Center (AFOTEC) issued a periodic report in May 2020, focusing on the RWR system.
- The Air Force conducted a fourth cybersecurity cooperative vulnerability identification in October 2019 and two phases of adversarial cybersecurity developmental testing in July and September 2020.
- In August 2020, the Air Force completed the live fire testing of the cockpit and cabin armor to support the evaluations

of survivability and force protection against operationally representative kinetic threats.
- In May 2020, the Air Force completed the live fire testing of the aerial refueling system and self-sealing fuel hoses in a flight-representative configuration.
- The Air Force continued planned analytical efforts to evaluate aircraft system-level vulnerability and force protection against kinetic energy weapons, directed energy weapons, electromagnetic, and CBRN threats.

Assessment
- AFOTEC identified poor hover symbology in degraded visual environments as a risk to IOT&E.
- Developmental tests of the external gun system identified deficiencies that increase workload and risk to crew members in some reloading scenarios, and gun mount binding problems that could limit weapon effectiveness and safety.
- On-aircraft chamber and open-air range testing of the RWR demonstrated progress toward mission capability, but some deficiencies remain. The RWR threat definition files are still developmental and not tailored to anticipated operational threats, resulting in excessive spurious detections. The HH-60W program does not have a plan to develop updated threat definition files in time to support the IOT&E. Additionally, the display of threat information (including infrared, laser, and small arms threats as well as RWR data) overlayed on the primary flight display for excessively long periods, obscuring navigation information.
- The Air Force acquired the necessary data to evaluate the aircraft survivability and force protection against operationally realistic kinetic energy threats.
- The armor did not demonstrate equivalent multi-hit performance to the currently fielded HH-60G armor; the effect on overall system survivability and force protection is pending. Self-sealing fuel hoses of the aerial refueling system demonstrated limited vulnerability to dry bay fire.

Recommendations

The HH-60W program should:
1. Update threat definition files and software to provide operationally representative RWR capability and hover symbology prior to the IOT&E.
2. Continue to support cybersecurity testing by providing test teams with access to all components, software, and support equipment.