

RQ-4B Global Hawk High-Altitude Long-Endurance Unmanned Aerial System (UAS)

Executive Summary

- The 2015 Presidential Budget fully funded the Global Hawk program, resolving several years of programmatic uncertainty. As a result, the Air Force has taken delivery of 18 of 21 RQ-4B Block 30 and 11 RQ-4B Block 40 air vehicles. Additionally, the program has delivered all Mission Control Elements and Launch and Recovery Elements.
- The Air Force plans to re-establish and formalize a combined RQ-4B Global Hawk Block 30/40 baseline program. In preparation for a future Milestone C decision for the revised program, the Air Force is working to define baseline “as is” system configurations, define future operational capability requirements, develop a revised acquisition and sustainment strategy, and produce a comprehensive RQ-4B Global Hawk Test and Evaluation Master Plan (TEMP) to test and evaluate the correction of deficiencies and the effectiveness of future enhancements. In addition, the Air Force is developing RQ-4B Block 30 operational test schedules and strategies to submit to DOT&E for review in a revised program TEMP 90 days after the Block 30/40 Capabilities Production Documents are approved by the Joint Requirements Oversight Council.
- The Air Force continued developmental testing of the RQ-4B Block 40 system in FY14 in preparation for the planned IOT&E in FY15.
- The program continued to support operational employment with two Block 40 systems in the U.S. Central Command (USCENTCOM) area of operations and two systems to the U.S. Pacific Command (USPACOM) area of operations. The operational capability of these systems is limited, but supports the immediate requirements of the operational forces.
- The Air Force is currently developing follow-on operational test strategies for future system enhancements for FY15 and beyond.

System

- The RQ-4B Global Hawk is a remotely-piloted, high-altitude, long-endurance airborne Intelligence, Surveillance, and Reconnaissance system that includes the Global Hawk unmanned air vehicle, various intelligence and communications relay mission payloads, and supporting command and control ground stations.
- The RQ-4B Global Hawk Block 30 system is equipped with a multi-intelligence payload that includes both the Enhanced Integrated Sensor Suite imagery intelligence payload and the Airborne Signals Intelligence Payload (ASIP) signals intelligence sensor.
- The RQ-4B Block 40 system is equipped with the Multi-Platform Radar Technology Insertion Program



(MP-RTIP) synthetic aperture radar payload designed to simultaneously collect imagery intelligence on stationary ground targets and track ground-moving targets.

Mission

Commanders use RQ-4 Global Hawk reconnaissance units to provide high-altitude, long-endurance intelligence collection capabilities to support theater operations.

- Operators collect imagery and signals intelligence data in order to support ground units and to identify intelligence essential elements of information for theater commanders. Units equipped with RQ-4B Global Hawk use line-of-sight and beyond line-of-sight satellite datalinks to control the Global Hawk system and transmit collected intelligence data.
- Distributed intelligence processing, exploitation, and dissemination systems receive intelligence data directly from the air vehicle or from the Global Hawk ground station via intelligence data transmission systems.
- Ground-based intelligence analysts exploit collected imagery, ground-moving target, and signals information to provide intelligence products in support of theater operations.
- Global Hawk can also provide imagery intelligence directly to forward-based personnel through direct line-of-sight datalink systems.

Major Contractor

Northrop Grumman Aerospace Systems, Strike and Surveillance Systems Division – San Diego, California

FY14 AIR FORCE PROGRAMS

Activity

- The 2015 Presidential Budget fully funded the Global Hawk program, resolving several years of programmatic uncertainty. As a result, the Air Force has taken delivery of 18 of 21 RQ-4B Block 30, and 11 RQ-4B Block 40 air vehicles. Additionally, the program has delivered all nine Mission Control Elements and all 10 Launch and Recovery Elements.
- The Air Force is completing the requirements to achieve a Milestone C decision that will establish and formalize a combined and coherent Global Hawk Block 30/40 baseline program.

Block 30

- The Air Force is continuing to acquire and pursue upgrade programs for the ASIP sensor. In addition, the Air Force planned to modify some RQ-4B Block 30 ASIP sensors for transfer and deployment on the U-2 Dragon Lady in FY14.
- The Air Force is developing future RQ-4B Block 30 operational test schedules and plans to be submitted to DOT&E for review in a revised program TEMP 90 days after the Block 30/40 Capabilities Production Documents are approved by the Joint Requirements Oversight Council.
- No RQ-4B Block 30 operational testing was conducted in FY14.

Block 40

- The Air Force continued developmental testing of the RQ-4B Block 40 system in FY14 in preparation for the planned IOT&E in FY15.
- The program continued to support operational employment, with two systems in the USCENTCOM area of operations and two systems to the USPACOM area of operations. The operational capability of these systems is limited, but supports the immediate requirements of the operational forces.
- The Air Force is currently developing follow-on operational test plans for future system enhancements for FY15 and beyond.
- The Air Force completed six planned interoperability test flights and three integrated system evaluation test events with U.S. Air Force Distributed Ground Stations (AF DGSs) to demonstrate system maturity and improve the exploitation and dissemination of RQ-4B Block 40 data.
- The Air Force also implemented a number of radar system and image processing changes intended to address synthetic aperture radar image quality problems observed during the FY13 RQ-4B Block 40 Operational Utility Evaluation. The impact of these software and processing upgrades will be demonstrated and fully evaluated during RQ-4B Block 40 IOT&E in FY15.

Assessment

Previous acquisition strategies have resulted in Block 30 and Block 40 being managed as separate programs. With the full funding in the 2015 Presidential Budget, the Air Force has revised its acquisition strategy and is working to bring all Global Hawk variants into one cohesive program. Block 30 and

Block 40 have separate operational test requirements, and the Air Force is working to develop a TEMP that will set a strategy for Block 30, Block 40, and any enhancements required in the future. This combined approach will codify the varied operational test requirements and identify test agencies and resources required to complete the evaluations.

Block 30

- Since the combined RQ-4B Block 30/ASIP IOT&E in 2011, the Air Force has corrected most RQ-4B air vehicle reliability and availability problems and implemented a limited number of previously planned system improvements. However, due to programmatic issues resulting from the previous DOD decision to retire the RQ-4B fleet, the Air Force has not yet conducted a comprehensive FOT&E to verify correction of all major IOT&E deficiencies. Currently fielded RQ-4B Block 30 systems continue to operate with many of the same operational performance and signals intelligence mission deficiencies identified during IOT&E.
- Preliminary program plans for the re-constituted RQ-4B Block 30 program include FOT&E events to assess SIGINT mission performance using the ASIP sensor, previously identified ground station, air vehicle, and communication system operational deficiencies, as well as a number of interoperability and cybersecurity shortfalls. The test schedule for future operational test events depends on the resolution of current program problems leading to a USD(AT&L)-approved program schedule.

Block 40

- The Air Force continued to execute planned developmental testing leading to IOT&E in FY15. Initial results from key developmental test integrated system evaluation events with AF DGS show improved maturity in MP-RTIP radar system stability and interoperability.
- The Program Office believes it has implemented fixes that will improve sensor stability and overall suitability prior to IOT&E. Field data from USCENTCOM early fielding appear to indicate that software fixes and procedural workarounds have improved suitability in comparison to FY13 Operational Utility Evaluation performance. All sensor modes and the enduring Tasking, Collection, Processing, Exploitation and Dissemination system will be rigorously tested and fully characterized during the IOT&E in FY15.
- Completion of Block 40 developmental test events was delayed due to slower than expected maturation of AF DGS software necessary to receive and exploit MP-RTIP radar data. IOT&E execution was delayed from 1QFY15 to 3QFY15 due to a combination of AF DGS software delays and expected adverse weather conditions at Grand Forks AFB, North Dakota.

Recommendations

- **Status of Previous Recommendations.** The Air Force has not yet completed an RQ-4B Block 30 or RQ-4B Block 40 TEMP to guide developmental and operational testing of these systems, nor has it proceeded with an ASIP sensor FOT&E event to verify correction of performance deficiencies identified during IOT&E. The Air Force has implemented some corrective actions for persistent RQ-4B Block 40/MP-RTIP sensor stability and radar image quality problems and is currently evaluating system performance in advance of IOT&E in FY15.
- **FY14 Recommendations.** The Air Force should:
 1. Develop an RQ-4B program TEMP to guide completion of post-IOT&E corrective actions and to define operational test requirements for future Block 30 and Block 40 system upgrades.
 2. Complete RQ-4B Block 40 developmental testing to verify MP-RTIP performance and stability prior to IOT&E in FY15.
 3. Develop a plan to complete the FOT&E for Global Hawk Block 30 signals intelligence mission to fully characterize system capability.

FY14 AIR FORCE PROGRAMS