

Shadow Tactical Unmanned Aerial Vehicle (RQ-7 Shadow 200)

Executive Summary

- As of July 2005, the Shadow Unmanned Aerial Vehicle (UAV) flew 36,963 flight hours and 9,265 sorties in support of Operation Iraqi Freedom.
- The system has gone through two major product improvements since the full-rate production decision in December 2003.
- The mishap rate for the Shadow UAV prompted the program office to undertake an engine improvement program during FY05.

System

- The Shadow UAV is a small, lightweight, tactical UAV system.
- The Shadow UAV consists of:
 - Four air vehicles capable of carrying modular mission payloads
 - Two High Mobility Multipurpose Wheeled Vehicles that serve as ground control stations
 - Launch and recovery equipment
- This system is designed to provide coverage to a brigade area of interest for up to four hours at a range out to 50 kilometers (km).
- The acquisition objective for the Shadow is 44 systems.

Mission

- A Brigade UAV Platoon equipped with the Shadow UAV executes reconnaissance, surveillance, and target acquisition missions.



- The Shadow UAV Platoon will enhance the ground commander's situational awareness with battle management information and battle damage assessments.
- Shadow UAV equipped units will be able to rapidly employ UAV assets to reconnoiter the battle space without exposing manned systems.
- This system allows the ground maneuver commander to collect intelligence during the day, at night, and in marginal weather conditions.

Activity

- The system has gone through two major product improvements since the full-rate production decision in December 2003: an airframe redesign integrated the Tactical Common Data Link for improved communications; and a Global Positioning System, coupled with an inertial navigation system, replaced the avionics suite to reduce target location error. This improved Shadow UAV is referred to as the Block 1B.
- The One-System Ground Control Station underwent a design change to enable the ground station to operate both Shadow and Hunter UAVs. To date, this One-System Ground Control Station has undergone contractor-run testing.
- As of July 2005, the Shadow UAV flew 36,963 hours and 9,265 sorties in support of Operation Iraqi Freedom.

- The mishap rate for the Shadow UAV is three per 1,000 flight hours with 26 percent of the incidents due to engine problems. The program office initiated an engine improvement program during FY05.

Assessment

- The Block 1B air vehicle provides increased endurance and reduced target location error. The flight endurance increased from 5 to 6.7 hours, and the target location error improved from greater than 200 meters during IOT&E to 80 meters, meeting the requirement.
- An accelerated fielding schedule to support Operation Iraqi Freedom, prompted production line modifications and engineering changes without sufficient developmental

ARMY PROGRAMS

and operational testing for the Shadow UAV Block 1B and the One-System Ground Control Station. The engineering changes delayed delivery of equipment to the Army, causing reduced collective training time and prevented a deploying unit from participating in the capstone certification exercise.

- Reliability issues with the air vehicle engine have persisted since the IOT&E conducted in April and May 2002.

Recommendations

1. The Army should conduct government developmental and operational testing for significant engineering upgrades for the UAV.
2. The Army should complete an engine improvement program with adequate testing to reduce the mishap rate.