

## RQ/MQ-1 and MQ-9 Predator Unmanned Aerial Vehicle System

### SUMMARY

- In February 2004, the Air Force Program Executive Officer approved entry into Increment 1 System Development and Demonstration. Milestone B in fall 2004 is contingent on the delivery of an approved Capabilities Description Document and Test and Evaluation Master Plan.
- The Air Force plans to purchase 23 of 55 total air vehicles and field a limited number prior to the FY07 Initial Operational Test and Evaluation (IOT&E) and full-rate production decision in FY08.
- The Air Force proposes no dedicated operational test prior to IOT&E.



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### SYSTEM DESCRIPTION AND MISSION

The RQ/MQ-1 Predator is a medium-altitude unmanned aerial vehicle intended to provide reconnaissance, surveillance, and target acquisition support to a theater, as well as a limited strike capability. Originally designated RQ-1, the Air Force changed the designation to MQ-1, acknowledging the system’s multi-role capability. The RQ-1 underwent IOT&E in 2001 and the one-hundredth RQ/MQ-1 was delivered in FY04.

The Air Force plans for the MQ-9 to fly higher and faster, provide more power, and carry larger payloads than the original Predator system. To do so, it must include a more robust airframe and power plant. The user plans to use MQ-9 in an armed reconnaissance (“hunter-killer”) mission to find, identify, and kill targets. Reconnaissance, surveillance, and target acquisition is a secondary mission. The combination of intelligence, surveillance, and reconnaissance capability and the ability to engage with onboard weapons or coordinate off-board strike assets should increase the probability of detecting - and successfully attacking - time sensitive targets.

The Air Force built two prototypes, designated YMQ-9, but they do not have the desired payload capacity. Subsequent air vehicles will have an increased gross takeoff weight along with added payload capacity, more thrust, and triple redundant avionics.

The ground station provides command and control of the air vehicle through pilot stations. The operator flies the air vehicle using stick and rudder control. The ground station also provides mission planning, communications, targeting, and imagery dissemination. The ground station must present the operator a coherent picture utilizing onboard systems, off-board data, and automatic target cueing. The program plans ground station commonality with MQ-1 for logistics purposes.

The current Air Force strategy anticipates incremental delivery of capability. Increment 1 of System Design and Development will incorporate improved sensor, communications, stores management, and ground station systems intended to provide an integrated system for accomplishing the hunter-killer mission. An IOT&E in 2007 and a full-rate production decision in 2008 will follow Increment 1 System Design and Development. Concurrent with Increment 1

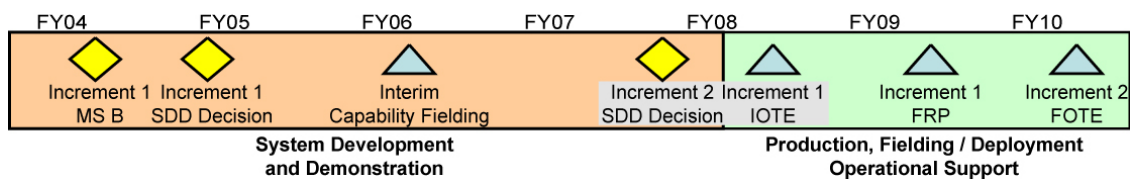
# AIR FORCE PROGRAMS

System Design and Development, some early air vehicles will employ laser-guided and GPS-guided 500-pound bombs (GBU-12 and GBU-38, respectively). These air vehicles will use existing sensors integrated with the MQ-1 ground station. Initial systems developed in 2004 will be capable of GBU-12 only; and interim systems developed in 2005 and delivered to Air Combat Command in 2006 will deliver both GBU-12 and GBU-38.

The contractor will complete the production of 16 aircraft that have some mission capability (initial, interim, or Increment 1 capability) and the Air Force will contract for 23 total air vehicles before the IOT&E. The Air Force plans to retrofit the remaining air vehicles to Increment 1 capability following IOT&E.

The Air Force plans to proceed to Increment 2 before the end of IOT&E, and before the delivery of the beyond low-rate initial production report on Increment 1.

## TEST AND EVALUATION ACTIVITY



YMQ-9 Number 3, which has the higher takeoff weight capacity, greater thrust, and triple-redundant avionics, first flew on October 17, 2003.

During FY04, developmental testing accumulated over 100 sorties and 250 flight hours. The primary objectives of the testing were integration of the LYNX Synthetic Aperture Radar, Multispectral Targeting System-B, and GBU-12, as well as flight performance testing. An MQ-9 also carried and released a Silent Eyes Micro unmanned aerial vehicle that delivered imagery through the MQ-9 to a ground station.

The Air Force accepted three new aircraft (numbers 3, 4, and 5) in FY04. These are the first vehicles intended to meet the Air Force's payload requirement.

The Air Force plans to submit a Test and Evaluation Master Plan to the Office of the Secretary of Defense for approval in November 2004.

## TEST AND EVALUATION ASSESSMENT

The early, rapid procurement of air vehicles and limited fielding to the user calls for early, rigorous operational testing. However, the Air Force does not plan to conduct any dedicated operational testing until FY07. The Air Force briefed DOT&E that it plans to have the Air Force Operational Test and Evaluation Center write an operational assessment in FY05. If completed, this operational assessment would not be based on a dedicated test event. It would be an operational test agency report on its evaluation of developmental test activities. Although the Air Force Operational Test and Evaluation Center expects to have some input into test conduct, there is no dedicated period of operational testing, funding, nor acquisition or fielding decision dependent on the event. The current test strategy does not identify specific operational assessment objectives, scope, or resources.

The user will take delivery of numerous MQ-9 systems and may deploy them into combat operations before the Air Force conducts dedicated, independent operational testing and evaluation.