EXECUTIVE SUMMARY

ABBREVIATED AIRCRAFT ACCIDENT INVESTIGATION
MQ-1B T/N 06-3173, Republic of Djibouti
7 MAY 2011

On 7 May 2011, at 0355 Zulu (Z) time, the mishap remotely piloted aircraft (MRPA), an MQ-1B Predator, tail number (T/N) 06-3173, crashed in the Gulf of Aden while returning to an undisclosed base approximately one and a half hours after takeoff. Destruction of the MRPA with one missile was assessed to be a financial loss of $4,400,000. No injuries, damage to other government property, or damage to private property occurred as a result of the mishap.

The aircraft belonged to the 432d Wing at Creech Air Force Base (AFB), Nevada, but was deployed at the time in support of Operation HORN OF AFRICA. The crew flying the aircraft at the time of the mishap was from the 3d Special Operations Squadron, at Cannon Air Force Base (AFB). The 60th Expeditionary Reconnaissance Squadron, in conjunction with the 849th Aircraft Maintenance Squadron, Holloman AFB, provided the maintenance support.

Following normal pre-flight checks, the MRPA taxied and departed a Forward Operating Base (FOB) at 0215Z. The Launch and Recovery Element (LRE) handed off the MRPA to the Mission Control Element (MCE) uneventfully at 0230Z. Forty-two minutes later, the MRPA experienced a Right Wing Control Module (RWCM) failure. The MCE crew accomplished all the correct critical action steps in the checklist as they turned the aircraft back towards the FOB. The MCE successfully handed off the MRPA back to the LRE at 0324Z. The AAIB President found by a preponderance of the evidence a substantially contributory factor in this mishap was the extended flight time due to the excess altitude at the handoff. At 0355:15Z, on approach to the landing runway, the MQ-1B initiated an uncommanded right roll. The LRE pilot recovered the aircraft to level flight, but then the MRPA began an uncommanded left roll that could not be countered by pilot input. The MRPA impacted the water at 0355:42Z. The MRPA was a total loss with some portions recovered.

The AAIB President determined by clear and convincing evidence that the cause of the mishap was component failure. Specifically, the MRPA experienced a transistor short in the right aileron servo, resulting in both a power supply voltage drop and an excessive current draw. This in turn failed the RWCM and caused the right aileron to move to a trailing edge up position. The servo had enough power to maintain the aileron's position, but was not communicating with the failed RWCM and could not respond to pilot commands. Eventually, the excessive current draw blew two fuses, removing all power from the right aileron servo. With no power to hold the aileron in place, the right aileron dropped due to gravity and aerodynamic forces, resulting in an uncommanded and uncorrectable left roll until it crashed into the water, while on final approach to the runway.