

EXECUTIVE SUMMARY  
AIRCRAFT ACCIDENT INVESTIGATION  
QF-4E, S/N 68-0385  
HOLLOMAN AIR FORCE BASE, NEW MEXICO

8 September 2004

On 8 September 2004, at 0932 local time, a QF-4E, S/N 68-0385, departed controlled flight and was intentionally destroyed by the ground station at White Sands Missile Range passing 8,800' Mean Seal Level after recovery attempts failed. The aircraft impacted 17 miles northwest of Holloman AFB in the confines of White Sands Missile Range. The QF-4E was assigned to the 82 ATRS, 53 WG, Eglin AFB, Florida and was being operated by the 82 ATRS, Det 1 at Holloman AFB, New Mexico. The QF-4E was functioning as number two of a two-ship Full Scale Aerial Target Remotely Piloted Vehicle supporting the F-22 Test and Evaluation program and was unmanned. The formation profile was flown a 35,000 feet Mean Sea Level and .9 mach. The mission profile did not call for the QF-4E to be destroyed. There were no injuries and, other than the loss of the aircraft, there was no property damage.

The mishap drone (MD) took off at 0850 Mountain Standard Time. Takeoff was uneventful through gear and flap retraction. At that time, the MD drone continued straight ahead and leveled off instead of flying its programmed track. The mishap controller (MC) attempted to regain control of the MD by selecting the backup automated flight control system (BUAFCS) when that did not work he reattempted BUAFCS and was able to regain control of the MD and proceed on the programmed track. Once it was determined that the MD was operating satisfactorily in BUAFCS, the Mission Commander approved sortie continuation and the MC believed primary automated flight control system (PAFCS) was not available. Following the decision to continue the mission, the MD picked up the departure track and joined up with Drone 1 to continue the mishap mission. The mishap mission proceeded uneventfully through the briefed dry pass, aborted hot pass due to shooter parameters, shooter delay for aerial refueling, and successful hot pass. During the planned drone escape maneuver following the missile shot, the MD departed controlled flight. Attempts to recover the MD were unsuccessful and it was intentionally destroyed using the ground-based UHF Flight Termination System (FTS). The MD was destroyed in the air and impacted the ground in two main pieces.

The AIB found clear and convincing evidence that this mishap was caused by the MD not reacting properly to the MC's inputs. As bank angle increased past 60 degrees, pitch and G increased rapidly due to the G required for 70+ degrees of bank and excess G due to slat induced pitch induced oscillations (PIO) to hold altitude in barometric altitude hold (BAH) mode. In this case, angle of attack (AOA) limits were exceeded and the MD stalled. Once the MD stalled, the autopilot and the MC input aileron corrections induced more yaw and the MD departed flight. Based on the telemetry review of flight control movements and the quickness of G onset, the AOA-limiting function of PAFCS would not have prevented the MD's departure.

*Under 10 U.S.C. 2254(d) any opinion of the accident investigators as to the cause of, or the factors contributing to, the accident set forth in the accident investigation report may not be considered as evidence in any civil or criminal proceeding arising from an aircraft accident, nor may such information be considered an admission of liability of the United States or by any person referred to in those conclusions or statements.*