

EXECUTIVE SUMMARY
AIRCRAFT ACCIDENT INVESTIGATION
RQ-1L "PREDATOR", S/N 97-3036
AT A DEPLOYED LOCATION ON 11 DECEMBER 2003

On 11 December 2003, at approximately 1500 Local Pacific Standard Time, an RQ-1L Predator, Remotely Piloted Aircraft (RPA), serial number 97-3036, 15th Expeditionary Reconnaissance Squadron, 57th Wing, Nellis Air Force Base, Nevada, impacted the terrain at a classified location while flying a mission in support of Operation ENDURING FREEDOM. There were no injuries or fatalities from the accident. Upon impact, the mishap RPA (MRPA) was damaged beyond economical repair. The loss is valued at \$3,300,000. There are no claims for damage to government or private property. There was minimal media interest regarding this accident. The MRPA had been conducting reconnaissance missions for approximately 6 hours at the time the mishap pilot (MP) took control. Prior to take off the MRPA had been inspected and no maintenance related or other discrepancies were noted. Likewise, the previous crews noted no discrepancies or malfunctions regarding the MRPA. Approximately 20 minutes after the inflight crew changeover, the MP grew concerned that he may be entering icing conditions. The MP disengaged both the Preprogram flight and Airspeed Hold mode of the autopilot. In Preprogram mode the RPA will automatically fly a pre-planned route. Airspeed Hold mode maintains a commanded airspeed. At that point, the nose of the MRPA tracked up abruptly to a high pitch angle (nose high unusual attitude) and slowed to near stall speed. A stall will occur when the speed of the air over the wings is insufficient to produce enough lift to keep the aircraft in the air. The MP attempted to manually counter the high pitch angle and recover the MRPA to normal parameters. Approximately two minutes later the mission control element (MCE) lost contact with the MRPA. Following a search of the area near the loss of contact, the MRPA was found destroyed after impact with the ground. USAF and USMC officials investigating the crash site elected to remove crucial components and destroy the existing wreckage due to the close proximity of the crash sight to the local populace. The primary cause of this accident, supported by clear and convincing evidence, was the abrupt pitch inputs made by the MP during a nose high unusual attitude after disengaging the autopilot. These inputs led to several oscillations exceeding the data link (electronic command and data signal from the pilot to the RPA) and airframe operating limitations of the MRPA and eventual loss of control of the MRPA. Four significant contributing factors, supported by substantial evidence, contributed to this mishap: (1) a software anomaly which set the pitch stick at 9 degrees nose high without MP awareness; (2) mishap crew icing analysis which led the MP to disengage the autopilot; (3) intermittent link connectivity with the mishap RPA due to the abrupt pitch stick inputs; (4) Finally, these factors led to a cycle of MP inputs, intermittent link with the MRPA and the MRPA's programmed lost link procedures produced a series of oscillations that exceeded operating limitations and link capability.

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 by the United States or by any person referred to in those conclusions or statements.