EXECUTIVE SUMMARY

AIRCRAFT ACCIDENT INVESTIGATION
T-38, SERIAL NUMBER (S/N) 67-4938
90 FLYING TRAINING SQUADRON (FTS), SHEPPARD AIR FORCE BASE (AFB), TX
5 DECEMBER 2000

On 5 December 2000, at approximately 1535 Central Standard Time (CST), the mishap aircraft (MA), a T-38, S/N 67-4938 crashed approximately 7 miles north east of the Foard County Airport, approximately 50 miles west of Sheppard AFB, Texas. The crew on the two-seat MA included the mishap instructor pilot (MIP), a Dutch captain assigned to the 90 FTS, 80 Flying Training Wing, Sheppard AFB, Texas, and the mishap student pilot (MSP) a USAF second lieutenant assigned to the 80 OSS, 80 FTW Sheppard AFB Texas. The MA was the number two aircraft in a two-ship formation formal training syllabus check ride. Both pilots ejected safely, sustaining only minor injuries. There were no civilian injuries. The MA was destroyed upon impact with the loss valued at 3.8 million dollars at the 1998 dollar rate. The impact area was in a wheat field, the site has been thoroughly cleaned of debris, and to date, no claims for damage to private property have been filed as a result of this mishap.

Shortly before mishap, the MSP was performing a G awareness maneuver. While rolling wings level, he felt a "burble" on the flight controls, "similar to flying through jet wash" followed immediately by an abrupt and uncommanded 2-G pitch up and roll to the left. The MIP took control of the aircraft shortly thereafter with approximately 120 degrees of bank and nose slightly above the horizon. The MIP was able to recover the aircraft to an upright position by using ailerons momentarily, however the aircraft entered a series of uncommanded rolling and pitching maneuvers duplicative of a "full aft stick" stall condition--albeit the stick was being held full forward, and began a high sink rate. MIP could not regain control of the aircraft and as the aircraft passed through 9,500 ft MSL, the MIP directed ejection.

I find clear and convincing evidence that the cause of this accident is a fatigue break in the left servo valve control rod-end. This component connects the left cable quadrant (which is connected to the control sticks via cables) to the left horizontal stabilizer actuator. As a result of the fracture the right actuator in unison with the left (via torque tube connection) could continue to drive both horizontal stab trailing edges up with further aft stick movement, but could no longer command any movement of the tailing edge down. This movement of the stab rendered the aircraft uncontrollable. At the time of the mishap, maintenance tech order only required visual inspections of this rod-end. However, the fatigue cracks are so small they are difficult to detect with the naked eye until they are near the point of fracture. A Non-destructive Inspection (NDI) type inspection would probably have revealed the cracks.

- If the left servo valve control rod-end had not fractured, the stab would <u>not</u> have been prevented from moving both up and down and the aircraft would have remained controllable.
- If NDI inspections of the rod-end had been required, the left servo valve actuator rod-end fatigue cracks would likely have been discovered and rod replaced prior to the accident.

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.

TOTAL P.02