

EXECUTIVE SUMMARY
AIRCRAFT ACCIDENT INVESTIGATION
F-16DG, SERIAL NUMBER (S/N) 88-0167
308th FIGHTER SQUADRON (FS), LUKE AIR FORCE BASE (LAFB), ARIZONA
23 JULY 2001

On 23 July 2001, at approximately 1831Z, an F-16DG, S/N 88-0167, assigned to the 308 FS, 56 Fighter Wing (FW), LAFB, Arizona experienced engine failure 10 minutes after takeoff, and impacted the ground 57 miles west south west of LAFB. The mishap pilot (MP), assigned to the 56 Training Squadron, 56 FW, ejected safely and sustained minor injuries. The mishap aircraft (MA) was destroyed upon impact with the loss valued at \$19,222,883.48. There was no damage to private property.

The MP was leading a 2-ship continuation training (CT) surface attack tactics (SAT) sortie that included a low level on Victor Route (VR)-231. Seven minutes into the low level, while flying at 500 feet above ground level (AGL), the MP felt what he defined as an explosion and the aircraft vibrated violently. The MP zoomed (established a climb) the aircraft and pulled the throttle to idle. During the zoom, the aircraft continued to vibrate violently and RPM decayed through 20%. Upon hearing a radio call from his wingman that his aircraft was on fire, the MP ejected at 7500 feet mean sea level (MSL).

There is clear and convincing evidence that two adjacent third stage disk inner airseal retaining fasteners in the low pressure turbine (LPT) failed and/or came loose and allowed it to move outward and forward. A section of this airseal made contact with the third stage vane inner airseal, liberating/damaging all third stage vanes and all of the following vanes and blades. Progression of damage led to drive shaft distortion, a titanium fire in the high pressure compressor (HPC) section, and engine seizure. Fragment(s) from the damaged LPT also pierced the outer case and the aft left A-1 fuel tank, allowing fuel to ignite and sustain an engine bay fire through impact. Time between initial cockpit indications and engine seizure was approximately 30 seconds. Post ejection, there were flight control deflections that resulted in abrupt pitch-ups prior to impact. These deflections were likely caused by damage to flight control system wire harnesses resulting from A-1 fuel tank damage and/or subsequent fire. Post impact examination of the wreckage and damage indicate that all other aircraft systems were within operational parameters prior to impact.

There is clear and convincing evidence that the engine failure was caused by the loss of two adjacent third stage inner airseal retaining fasteners. However, the evidence is insufficient to determine whether the fasteners were lost due to a manufacturing defect or because they were incorrectly installed. Maintenance technical orders permit fastener installation at the depot (Oklahoma City Air Logistics Center (OC-ALC)) and intermediate (base) levels of maintenance. The third stage airseal fasteners in this engine were last installed at depot. OC-ALC is evaluating whether there is a manufacturing defect.

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.