

## EXECUTIVE SUMMARY

Accident Investigation  
F-16DG, S/N 90-0794  
Moody AFB, GA  
16 February, 2000

On 16 February 2000, at approximately 23:37L a two seat F-16DG, S/N 90-0794, crashed after experiencing engine failure during an air intercept night vision goggle (NVG) upgrade mission. The two pilot mishap crew, call sign Speed 2, flew as formation wingman on their second sortie of the night. Both pilots in the mishap aircraft felt a "bang" and noted the engine winding down while executing their fifth intercept of this sortie. The mishap aircrew called "knock it off" at 23:30L time and climbed to 16,400 feet above sea level. The mishap engine quit and the aircrew attempted two restarts on the engine. About 4 minutes and 11 seconds from the "knock it off" call both mishap pilots ejected safely. The aircraft exploded on ground impact approximately 4 miles north of Donaldsonville, GA. Neither pilot experienced significant injuries. The lost aircraft and equipment was valued at \$25,300,881. Civilian property damage at the crash site consisted of roof damage to one house plus spilled liquids and fire damage in two fields. Additionally, the mishap aircraft's two jettisoned drop tanks spilled fluids when they landed 4.2 miles north east of the crash site. There were no civilian injuries.

The evidence points clearly and convincingly to a failure of the number 20 first stage fan blade as the cause of this mishap. Technical review indicates electrical arcing during manufacture damaged the number 20 fan blade. Over time, the damaged blade cracked and tensile overload of the fatigue crack allowed the blade to shear and it was ingested in the engine, destroying the engine. Thereafter, the damaged engine could not keep the mishap aircraft airborne long enough for the pilots to land safely.

In July 1999 USAF's Air Logistics Center published two inspection technical orders for GE F110 engine fan blades. Technical Orders 2J-F110-748 and 749 directed focused inspections of first stage fan blade dovetails, searching for electrical arcing that damaged some blades. The mishap aircraft's fan blade assembly did not fall within the inspection criteria prescribed in the new TCTOs, but it should have. TCTO 748 directed local engine shops to inspect only engines that had not yet been inspected at the required 6,000 TACN depot level overhaul and had total accumulated cycles since new on the fan rotor assembly between 3,000 and 6,000 TACN. TCTO 749 inspected all blades that returned to depot. All blades not installed on engines were recalled to depot for inspection. The mishap fan assembly had 7,303 TACN at the time of the mishap and had already been inspected by standard methods during the 6,000 TACN overhaul before TCTO 748 and 749. This allowed the mishap engine to be cleared for flight until the next depot visit at 9,000 TACN. Since the mishap blade broke despite passing depot inspection, it appears the upper TACN limit on improved inspection TCTO 748 and the assumption that previous 6,000 TACN inspection effectively identified defects were wrong. TCTO 748 would likely have caught the faulty blade in the mishap engine. TCTO 748 should have directed local engine shops to inspect all fan blades over 3,000 TACN at the next engine shop visit.

*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.*