

**EXECUTIVE SUMMARY**  
**AIRCRAFT ACCIDENT INVESTIGATION**  
**F-15C, S/N 80-0052**  
**NELLIS AIR FORCE BASE, NV**  
**25 MARCH 2005**

The Mishap Aircraft (MA) F-15C, S/N 80-0052, experienced a departure from controlled flight and spin on 25 March 2005 during a Force Development Evaluation defensive Basic Fighter Maneuvers (BFM) mission against an F/A-22 Raptor and impacted the ground at N3653.690 W11437.658, approximately 45 miles northeast of Nellis AFB, NV. During the mission, five defensive BFM setups were performed. Approximately one minute into the fifth setup at about 1,000 feet above the training floor, the mishap pilot (MP) executed a left rudder roll underneath in an attempt to give a closure problem to the Raptor. As the MA passed an inverted attitude, the MA departed controlled flight and entered an upright, left-hand, low rate erect spin. After five revolutions with no apparent recovery, the pilot, assigned to the 59th Test and Evaluation Squadron, ejected safely and sustained no injuries. There was no significant property damage and no injuries to civilians on the ground. The aircraft was totally destroyed upon impact with the loss valued at \$47,206,866.

There is clear and convincing evidence that the primary cause of this accident was the failure of one of the MA's horizontal stabilators. There is clear and convincing evidence that the MP could not have flown the MA in such a manner as to cause the MA to depart controlled flight and enter the spin. The cause of the spin entry, and a contributory factor to the subsequent recovery failure, was an undetermined aircraft flight control failure, either a right horizontal stabilator failed leading edge down or a left horizontal stabilator failed in the neutral position.

There is clear and convincing evidence that the Out-of-Control/Departure Recovery checklist was causal in the MA's failure to recover from the spin because it fails to mandate split throttle power selection during recovery. There is clear and convincing evidence that the MP applied proper anti-spin flight controls whereby a fully functional F-15C would have recovered from the spin in 1-1/2 to 2 turns with lateral stick recovery controls alone. A contributory factor in the lack of spin recovery was the absence of direct anti-spin yawing moment via asymmetric thrust since both throttles were matched at idle.

A fully functional F-15C would have recovered from the initial out-of-control situation after the MP neutralized controls and could not have generated the observed pitching up or yawing moments just prior to spin entry. Boeing engineering analysis of the Air Combat Maneuver Instrumentation flight data concluded that the MP could not have caused the MA spin based on the aerodynamic parameters at the time of the spin. Engineering analysis indicates that only an F-15C with a failed horizontal stabilator could generate the observed pitch-up and yawing moments required to depart controlled flight and enter the spin. With such a failure, recovery from the ensuing spin would be impossible unless the MA throttles were split against the yaw.

*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.*