

PART ISUMMARIES OF AIRCRAFT ACCIDENT REPORTSNo. 1Latecoere - 531 F-WANU aircraft, crashed off  
Cape Ferret, on 28 March 1950.Circumstances

The aircraft, engaged on a test flight on 28 March 1950 between Point de Grave and Mimizan and carrying 12 crew and observers, crashed into the sea 3 miles off the Atlantic coast when control was lost after the port aileron was torn off. All twelve members lost their lives.

Investigation and Evidence

The test flight was both an acceptance test by the S.E.M.A.F. and a continuation of surface strain measurements on propellers 1 and 4 by the C.E.M.H. At 1730 (local time) the aircraft was flying normally at high altitude in a NNW-SSE direction approximately 3 miles off shore. For no apparent reason, a large, heavy mass became detached from the port wing, the aircraft began to dive and then rapidly went into a spin. The aircraft turned several times in the spin, levelled off but on its back, went into a spin again and crashed into the sea.

A large proportion of the aircraft was recovered and the accident report gives details of its examination. The outer port aileron which was found by chance in the net of a trawler, had characteristic failures which were very carefully examined. All wing connections were broken. The control rod connection with the aileron was intact, but the ball bearing which forms part of the end of the control rod was found on the aileron attachment held by its shaft. This would imply that the end of the control rod broke in the diametrical plane of the ball bearing.

The universal joint connecting the outer and inner ailerons was torn from the inner aileron by shear and bending failure of the joint ring following piercing of the outer spar fitting.

The shear and bending failure of the universal joint ring would appear to indicate that the end of the outer aileron had been pulled backwards and downwards in relation to the inner aileron.

The mobile mounting of the aileron had a shear failure with slight backward bending near the upper surface.

The linkage between the trailing edge spar of the tab of this aileron and the trailing edge spar of the tab of the inner aileron had been folded over backwards and the bracing wire fitting on the trailing edge spar of the tab of the inner aileron had been torn off.

Four ribs of the aileron overhang were broken at the lower surface and a tear in the upper surface skin covering the end rib continued this rib failure.

The failure of the rib flanges did not cause any tear in the fabric.

The condition of the aileron and the fact that it was found a mile to the North of the point where the main wreckage was found indicates that it became separated from the aircraft in flight and its impact with the water was reduced by its "falling leaf" descent since it bore no signs of such impact.

The inquiry considered a number of theories including the possibility of a malicious act involving sabotage, the possibility of a caused or accidental explosion and abnormal vibration causing fatigue. These were fully examined and tests were conducted.

#### Probable Cause

The inquiry came to the conclusion that the probable cause of the accident was fatigue failure of the aileron control couplings resulting from the simultaneous occurrence of several vibratory phenomena:

The cruising speed of the propeller with a 7/16 reducing gear in resonance with the critical vibratory frequencies of the wing and the aileron (excitation amplified by the propeller cuffs);

The occurrence of extreme aileron flutter, aerodynamically induced as a result of failure of the linkage between the aileron and the slat.

It was impossible for the crew to detect these phenomena before their results became irreparable.