AIRCRAFT ACCIDENT REPORT No. 1/94

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REPORT ON THE ACCIDENT TO AEROSPARIALE AS355F1 TWIN SQUIRREL, G-OHMS NEAR LLANBEDR AIRFIELD, GWYNEDD ON 8 DECEMBER 1992

SUMMARY

The helicopter was in cruising flight when, without warning, the drive train from the No. 2 engine to the main gearbox severed and the engine mount onto the gearbox fractured. A successful single engine landing was made. The damage resulted from the disintegration of a Thomas coupling in the drive train located concentrically with a universal joint in the support structure between the engine and the main gearbox. The similar coupling in the No. 1 drive train had started to break up.

The evidence indicated that severe deterioration of a number of laminated rubber pads that restrain the bottom of the main gearbox had allowed excessive main gearbox movement under the influence of main rotor reaction loads, resulting in fatigue failure of the Thomas coupling due to excessive angular misalignment. The severance of the mounting structure allowed the No. 2 engine to rotate about its remaining flexible ball mounting and it had pivoted until restrained by the engine bay door. Two pairs of Terry pins retaining the pivot pins for the universal joint had detached and one pivot pin had slid out of engagement; this was most probably the result of drive train vibration. A similar serious incident to an Aerospatiale AS355 helicopter was investigated by the AAIB in 1991. The recommendations made at that time remain 'Open' and the safety issues are still the subject of discussion between the CAA and Eurocopter.

Three additional safety recommendations were made to the CAA on 19 April 1993:

93-33 Require, for UK registered AS355 helicopters and other types with similar design features, a positive means of retaining the UJ pivot pins that does not rely on springs.

93-34 Require, for UK registered AS355 helicopters and other types with similar design features, more frequent inspection of the MGB bilateral suspension system laminated pads of a type that permits adequate assessment of their condition, and require recommended inspection intervals and procedures to be clearly specified.

93-35 Include considerations of the complexity of the aircraft and the type of operation in the criteria for:

a) Approving use of the CAA Light Aircraft Maintenance Schedules (LAMS).

b) Application of the CAA Mandatory Occurrence Reporting (MOR) system.