

Agusta Bell 206B, G-SPEY

AAIB Bulletin No: 12/99 **Ref:** EW/G99/09/03 **Category:** 2.3

Aircraft Type and Registration: Agusta Bell 206B, G-SPEY

No & Type of Engines: 1 Allison 250-C20B turboshaft engine

Year of Manufacture: 1980

Date & Time (UTC): 3 September 1999 at 1040 hrs

Location: St Austell area of Cornwall

Type of Flight: Aerial Work

Persons on Board: Crew - 1 - Passengers - 1

Injuries: Crew - None - Passengers - None

Nature of Damage: Electrical damage to main rotor gearbox and one main rotor blade

Commander's Licence: Airline Transport Pilot's Licence (Helicopters)

Commander's Age: 44 years

Commander's Flying Experience: 7,534 hours (of which 2,545 were on type)

Last 90 days - 70 hours

Last 28 days - 33 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

Collision with power line

The helicopter was engaged on a filming task at low level for which an approved exemption to the Air Navigation Order (1995) had been obtained. The passenger, who was the camera operator, had completed the third of four filming sequences and the pilot then flew to the fourth location. The pilot was aware of an 11 kilovolt (kV) powerline which ran alongside a road but did not see the 33 kV powerline which ran across the valley. After the helicopter had flown into this powerline, and although there was no apparent damage to the helicopter, the pilot made a precautionary landing in an adjacent field. A second company helicopter was despatched to the site with an engineer. The engineer inspected the helicopter and, with the exception of cracks to the lower windscreens, the damage appeared to be contained to the casing of the external camera mount which was then removed. The helicopter was assessed as serviceable to return to its base. Subsequent engineering investigation by the company discovered 'lightning discharge' type damage to some of the avionics and structural elements of the helicopter.

Assessment of damage

An AAIB Inspector examined some of the components from the helicopter and noted various areas of damage that appeared to be the result of high voltage electric current passing through the machine. In particular, a number of meshing gears within the main rotor gearbox showed pitting of the working surfaces of the teeth and evidence to suggest that internal damage to bearings had occurred. One of the main rotor blades was found to have suffered electrical arcing type damage on the trailing edge near the root, and further such damage at the tip. Both that blade and numerous gearbox components were judged to be damaged beyond repair.

Visual location of powerlines

The local weather conditions at the time of the incident were good with a light north easterly wind, visibility greater than 10 km and no significant cloud. The pilot commented that the 33kV powerline was very difficult to see since the pylons supporting this line were located in dense woodland and the cable itself was green. The pilot of the second helicopter also had difficulty in locating the powerline prior to landing even though he had been warned of its presence. Subsequent measurements indicate that the span between the pylons was 220 metres and the cable was approximately 200 feet above the valley floor. There is currently no national policy to increase the conspicuity of such powerlines and it remains the responsibility of the pilots to locate and avoid these hazards. The CAA 1:250,000 aeronautical chart only depicts pylons and powerlines that are higher than 80 feet. There are then two classifications of pylons depicted on the chart; those between 80 and 200 feet and those above 200 feet. There is thus no CAA aeronautical chart normally available that would depict this powerline since the pylons were below 80 feet in height. Such data can only be obtained through the electricity company responsible for the powerline or through military mapping sources if the data is unclassified.