AAIB Bulletin No: 3/96 **Ref: EW/G95/10/21** **Category: 2.3**

INCIDENT

Aircraft Type and Registration:	Agusta Bell AB206B II, G-COUR	
No & Type of Engines:	1 Allison 250-C20 turboshaft engine	
Year of Manufacture:	1968	
Date & Time (UTC):	27 October 1995 at 1527 hrs	
Location:	2 miles south east of Hitchin, Hertfordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 2
Injuries:	Crew - None	Passengers - None
Nature of Damage:	None	
Commander's Licence:	Private Pilot's Licence (Helicopters) with Night Rating	
Commander's Age:	36 years	
Commander's Flying Experience:	539 hours (of which 77 were on type) Last 90 days - 83 hours Last 28 days - 15 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

The helicopter was en route from a private site near Cambridge to a private site in Dorset, flying straight and level at about 1,500 feet with 80% torque being maintained. The weather was good with visibility more than 10 km, no low cloud and a light westerly wind. The pilot then became aware of the helicopter descending sharply followed by a jolt and then the nose pitching up in a left turn. Realising that the helicopter was descending in an increasingly unstable manner the pilot entered autorotation, lowering the nose to gain airspeed and choosing a field in which to land. He transmitted a 'MAYDAY' distress message to Luton Approach from whom he had been receiving a Flight Information Service whilst transiting their control zone.

After a successful engine-off landing the pilot completed his shut down drills, cancelled the distress message and evacuated the helicopter with his passengers. The pilot cannot recall closing the throttle during the engine-off landing but was aware that throughout the descent and landing the engine was at idle power. He attributes his successful landing to his recent and regular training in engine-off landings.

The helicopter's maintenance organisation examined the aircraft and, finding nothing obviously defective, ran the engine on-site. It performed normally at all power settings but, in view of the pilot's account of events, they decided to change the Fuel Control Unit (FCU). Following this the helicopter was flown back to base and there has been no report of further problems.

The FCU, P.No. 104100A13-A8/6896313 was despatched to the UK Allison agents for investigation. They reported that the power turbine governor failed to respond to RPM changes during the slope check, suggesting that the bypass valve was sticking at various times in both the open and shut positions (ie overspeed and underspeed conditions). Visual inspection of the valve did not reveal any obvious reason for the sticking although contamination may have been present as the fluid residue on the valve and sleeve felt somewhat gritty. Further investigation revealed that the speed rotor thrust bearing had worn oval and beyond specified limits. These findings were considered to be consistent with the reported behaviour of the engine, since had the valve stuck in the open position during flight, the engine would have run down to idle as a result.