No: 8/86 **Ref: 1b**

Aircraft type and registration:	Gulfstream American Corporation AA-5A G-BIPL
No & Type of engines:	One Lycoming 0-320-E2G piston engine
Year of Manufacture:	1979
Date and time (UTC):	3 July 1986 at 1950 hrs
Location:	Denham Aerodrome, Buckinghamshire
Type of flight:	Private (Training)
Persons on board:	Crew — 2 Passengers — None
Injuries:	Crew — 1 (Fatal) 1 (Serious) Passengers — N/A
Nature of damage:	Aircraft destroyed by fire
Commander's Licence:	Private Pilot's Licence
Commander's Age:	36 years
Commander's Total Flying Experience:	324 hours (of which 100 were on type)
Information Source:	AIB Field Investigation.

The purpose of the flight was to conduct an upper-air work instructional detail with the student, who was making his fourth flight. The aircraft was seen to rejoin the circuit and make a normal approach to runway 25.

The flare was made 10—20 feet above the threshold, a height which was maintained until, about a third of the way along the runway, the aircraft bounced once and dropped heavily onto all three wheels. It was then seen to slew fairly gently from side to side, before the nose was raised and it took off again.

The nose-up attitude which the aircraft adopted on take-off was observed by an aerodynamicist, himself a pilot, who stated that it was so steep that the crash was inevitable from the time that the aircraft left the ground. In the event, the aircraft climbed to about 30 feet, flicked to the left and, with the nose dropping, fell to the ground some 100 metres to the south east of the runway 07 threshold.

The impact forces were almost totally absorbed by the small trees of a coppice into which the aircraft fell, and the resultant damage to the airframe was very limited. However, after about 3 seconds, the aircraft exploded into an extremely severe fire which totally destroyed it. The aerodrome fire appliance was immediately mobilised but, on arrival at the accident site was unable to make foam. The reasons for this are being examined by the Civil Aviation Authority. Nevertheless, the student managed to open the cockpit hood and escape from the wreckage,

albeit suffering from severe burns. The instructor, for reasons unknown, did not.

Detailed examination of the wreckage was severely restricted by the severity of the fire, which left few components of the airframe not reduced to ash and only the main portion of the engine recognisable as such. The remaining evidence, however, showed that the flaps were fully retracted at impact and the control runs, from the flying controls as far as the destroyed surfaces, were intact.

The engine had previously been reported as lacking power, but had been ground tested by the maintenance engineers the day before the accident and found fully serviceable.

One through-bolt on the engine, securing two "opposed" cylinders, and passing through the crank-case, was found with one end unsecured by a nut. The bolt had therefore migrated towards the other end until restrained by the cooling fins of the cylinder. Some of the other securing nuts were found to be only "finger-tight", but this is believed to be a consequence of the intense fire. It is also believed that the one loose bolt, because of the design of the cylinder to crank-case attachment and also the presumed security of the other studs and bolts, would not have caused a degradation of the engine performance. Both the magnetos and the carburettor were destroyed in the fire. It was therefore not possible to explore the possibility of reduced engine power.