

Aircraft type and registration: Pitts S-ID Special G-POKE (light single engined bi-plane)

Year of Manufacture: 1973

Date and time (GMT): 2 July 1985 at 1713 hrs

Location: In the sea 1 nm from Bognor Regis, West Sussex

Type of flight: Pleasure

Persons on board: Crew — 1 Passengers — None

Injuries: Crew — 1 (fatal) Passengers — N/A

Nature of damage: Aircraft destroyed

Commander's Licence: Private Pilot's Licence

Commander's Age: 40 years

Commander's Total Flying Experience: 1,946 hours (of which 118 were on type)

Information Source: AIB Field Investigation.

History of the flight

The aircraft took off from a private airfield at Bognor Regis at approximately 1645 hrs. The pilot was seen to have been properly strapped in, and was wearing a parachute. A number of aerobatic manoeuvres were performed to the north east of the airfield before the aircraft was seen carrying out a further aerobatic sequence in the vicinity of Itchenor and the Chichester Channel. Shortly after 1700 hrs a small red bi-plane was seen flying low over Pagham Harbour, from west to east, and out over the sea in the direction of Bognor.

The aircraft was seen to perform a combination of rolls and loops, culminating in a pull-up and vertical climb as if attempting a stall turn. At a height variously estimated as being 500 to 1,200 feet amsl, the engine noise decreased; but as the aircraft was approximately half a mile out to sea witnesses were unsure of exactly when during the manoeuvre this occurred. The majority of witnesses state that the aircraft entered a rotational descent, and appeared to be starting to pull out with an application of some power just before it flew into the sea. The aircraft then sank in 15 to 20 feet of water.

Emergency services were alerted by onlookers, and a number of small boats were launched but were unable to locate the aircraft. Lifeboats were launched at Littlehampton and Selsey, and a helicopter was scrambled from Lee-on-Solent. The Selsey lifeboat located the wreckage and sent down two divers, reporting to the coastguard at 1910 hrs that the body of the pilot had been recovered. He was found strapped into the aircraft, but it became apparent later that his upper torso restraint had failed. The pilot was also found to have suffered a severe blow to the head.

Examination of the Wreckage

The aircraft wreckage was salvaged from the sea by the Sussex Police Underwater Search Unit the following day and removed to AIB Headquarters at RAE Farnborough.

Detailed examination of the wreckage revealed that the aircraft had struck the water in an approximate 30° nose down, wings level attitude and at a low to moderate speed. The engine/propeller combination at this time was assessed as producing a low level of power. At impact the aircraft was structurally complete, all damage being consistent with the undercarriage, propeller and lower engine cowling striking the water first, resulting in the aircraft pitching rapidly nose down. This had allowed the upper wing to strike the water with relatively great speed, causing disintegration of its central structure.

The examination failed to reveal any failures or defects within the engine, flying control systems, or structure, which could not be attributed to impact forces. As a result of these forces, two failures occurred which may be considered to have had a direct influence on the surviveability aspects of the accident. These occurred in the links connecting the two upper torso restraints to their respective rear fuselage attachment cables. Lack of distress to both the cable ends, their attachment fittings, and the fabric of the restraints suggested that failure occurred at a relatively low loading. Deformation of the instrument panel was consistent with it having received a blow from the pilot's head trapping the pointer of the engine RPM gauge at 1500 RPM. The configuration of the links, of which only one was recovered, did not conform to that now recommended by the commercial manufacturer of the Pitts Special, whose pilot restraint system is understood to be capable of withstanding a forward inertial loading of 20g. The current British Civil Airworthiness Requirements (BCAR's) for light aircraft, in this direction is 9g although there is no requirement for Popular Flying Association (PFA) registered aircraft to conform directly to the BCAR's.

A defect was discovered in the fuel system, which may have led to a loss of engine power just prior to the accident. Strip examination of the engine driven diaphragm fuel pump revealed a thin flap of rubber trapped across the inlet side of the output non-return valve, producing a blockage of 75 to 80% of the fuel flow area. This rubber was identified as having come from one of the fuel supply hoses fitted between the pump and the airframe fuel filter, and was of approximately 1 square centimeter in area. It had formed part of the hose lining which was partially cut away as the hose end fitting was installed during manufacture. As the engine was fitted with a Bendix PS 5C pressure carburettor, any significant reduction in fuel flow or supply pressure would have an immediate effect on engine power output as no reservoir of fuel is carried within this type of carburettor.

Evidence of fuel was found throughout the fuel system, which was heavily contaminated with sea water.

Examination of the aircraft's documents revealed it to be a 'homebuilt' example of a Pitts Special, constructed in the USA in 1973/74. In 1980, with a total time of 218 hours, it was imported into this country and issued with a Permit to Fly (PTF), following re-assembly. At the time of the accident, aircraft total time was 326 hours 45 mins; the aircraft did not possess a valid PTF, this having expired on 17th January 1985.