ACCIDENTS INVESTIGATION BRANCH
Department of Trade and Industry

Piper PA 22 Series 150 Tri-Pacer G–APXS Report on the accident at Kingsdown, near Sittingbourne, Kent on 8 June 1971

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Department of Trade and Industry
Accidents Investigation Branch
Shell Mex House
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2 June 1972

The Rt Honourable John Davies MBE MP
Secretary of State for Trade and Industry

Sir

I have the honour to submit the report by Mr G M Kelly an Inspector of Accidents, on the circumstances of the accident to Piper PA 22 Series 150 Tri-Pacer G–APXS which occurred at Kingsdown, near Sittingbourne, Kent on 8 June 1971.

I have the honour to be
Sir
Your obedient Servant

V A M Hunt
Chief Inspector of Accidents

Accidents Investigation Branch
Civil Accident Report No EW/C 383

Aircraft:	Piper PA 22 Series 150 Tri-Pacer G–APXS
Engine:	Lycoming 0–320
Registered Owner:	Mr R Sanders, Trustee of the Assets of the Stapleford Tiger Group
Operator:	Stapleford Tiger Group
Pilot:	Mr A F Henty – Killed
Passengers:	Three – Killed
Place of Accident:	Kingsdown, near Sittingbourne, Kent
Date and Time:	8 June 1971 at approximately 1734 hrs
	All times in this report are GMT

Summary

The aircraft was on a private flight under visual flight rules (VFR) from Le Touquet to Southend. North of Ashford, Kent, the aircraft ran into low cloud and the pilot was unable to continue visually. He requested assistance from Southend air traffic control (ATC) and was asked, if he could, to climb to 2,000 feet to establish radar contact.

A blip then appeared on the radar screen in approximate relationship to the geographical position of G–APXS. However when the radar controller gave the pilot instructions to take up a new heading for identification, the blip did not respond appropriately but made a left and then a right turn before disappearing from the screen. At this time a light aircraft was heard circling in cloud over Kingsdown and then G–APXS spiralled out of the cloud to crash in a field. The aircraft caught fire and the occupants were killed.

The report concludes that the accident was the result of the pilot becoming disorientated in cloud. The base of the cloud was too low for recovery to be made by visual reference before the aircraft struck the ground.

1. Investigation

1.1 History of the flight

The aircraft was on a private flight from Le Havre to Stapleford Tawney via Le Touquet and Southend, having flown to Le Havre over the same route on the previous day. It took off from Le Havre at approximately 1200 hrs and arrived at Le Touquet at 1254 hrs. No flight plan was filed for this sector. After a stop of nearly four hours at Le Touquet, the aircraft took off again at 1644 hrs for Southend, the pilot having filed a VFR flight plan. Position reports were made at appropriate times and when the aircraft reported over Ashford Town, Kent, it was cleared to Southend Approach.

At 1722 hrs the pilot called Southend Approach and reported that the aircraft was just clearing Ashford Town and flying 'in a little bit of cloud' at 1,000 feet. Southend Approach replied with the latest Southend weather – seven oktas of cloud at 1,000 feet with 12 kilometres visibility and the surface wind 100° at 8 knots. Nothing more was heard from the aircraft until 1728 hrs, when it reported that it was in bad weather and requested assistance.

Southend Approach, having ascertained from the pilot that he was steering 340°(M), gave him a magnetic heading to steer to reach Southend (QDM) of 360° and asked the pilot if he had an instrument meteorological conditions (IMC) rating or was able to fly in cloud. The pilot reported that he was just in cloud to which the controller said that in order to get a radar contact he would like the pilot to climb to 2,000 feet. The pilot's reply was lost in a simultaneous transmission and so the controller repeated his request and asked the pilot if he was able to do this. The pilot replied that he was climbing to 2,000 feet. When the controller next asked the pilot for the aircraft's heading the latter said that it was 300°(M). The controller repeated that the QDM to Southend was 360°. At 1730 hrs the controller reported that he had a radar contact about 17 miles south of Southend and asked the pilot to turn on to a heading of 330°(M) for identification. He saw the blip on the radar screen make a tight turn to the left but instead of settling on to 330°(M) it continued to turn through west and south on to a south easterly heading. The controller asked the pilot whether he was making a 360° turn, ie a complete circle and the pilot replied that he was just coming onto 330°(M). The blip was then seen to make a tight turn to the right, and during this turn it disappeared from the radar screen. There was no further radio or radar contact with the aircraft.

At about this time witnesses near the scene of the accident saw an aircraft flying just below the cloud base, which they estimated was about 400 feet. It commenced a climbing turn to the left and disappeared into the cloud. The engine noise was heard to be increasing and the aircraft was then seen diving out of the base of the cloud at an angle of approximately 60° to the horizontal and turning very slowly to the right. No smoke was seen coming from it and nothing was seen to become detached from it in flight. The dive continued down to the ground, and the aircraft caught fire a few seconds after the impact. Rescuers were promptly on the scene but the occupants were already dead.

1.2 Injuries to persons

Injuries	*Crew*	*Passengers*	*Others*
Fatal	1	3	–
Non-fatal	–	–	–
None	–	–	–

1.3 Damage to aircraft

Destroyed.

1.4 Other damage

The aircraft came to rest alongside a three-foot wire fence. The fire damaged four of the supporting posts. There was some spillage of fuel on an adjacent crop of peas and a small area was contaminated and destroyed.

1.5 Crew information

Mr A F Henty, aged 54, learned to fly at Stapleford Tawney in 1964 and in July of that year obtained a Private Pilot's Licence for Group A aircraft (land-planes). This licence and the associated restricted radio telephony licence were valid until 11 April 1976. He did not hold either an Instrument Meteorological Conditions (IMC) rating or a night rating and had not completed a recognised course in instrument flying. His last medical examination for the renewal of his licence was held on 30 July 1970. Mr Henty was a member of the Stapleford Tiger Group which operated G–APXS.

At the time of the accident he had accumulated about 300 hours flying experience but this total could not be confirmed as his flying log book was not found having probably been destroyed in the aircraft fire. According to his personal flying records he had flown 70 hours 51 minutes since November 1969 as pilot-in-charge of G–APXS, and had made several cross-country flights. Two previous flights had been made to Le Touquet since 19 April 1971, and in the month prior to the accident he had flown 16 hours.

1.6 Aircraft information

G–APXS was a four seater, single engined, high wing monoplane. It was first registered in January 1960, and was subsequently registered in the name of Ronald Sanders, Trustee of the Stapleford Tiger Group on 4 September 1969. It had flown approximately 4,166 hours since new, and its certificate of airworthiness was valid until 22 April 1973. The aircraft had been maintained in accordance with an approved maintenance schedule.

The aircraft was fitted with dual controls and equipped with a full blind flying panel fitted with an artificial horizon, a directional indicator and a turn and slip indicator in addition to the normal pressure instruments. It carried a multi-channel very high frequency (VHF) combined communication and navigation radio set and automatic direction finding (ADF) equipment.

1.7 Meteorological information

There is no record of the pilot having requested information about the weather over the proposed route either at Le Havre, where the journey commenced, or at Le Touquet before his departure for Southend. It is not known, therefore, what weather information he had in his possession. The weather at Le Touquet at 1700 hrs was:

Wind:	300 degrees 6 knots
Visibility:	7 kilometres
Sky:	clear

At 1722 hrs the following Southend actual weather was passed by radio to the aircraft:

Surface wind:	100 degrees 8 knots
Visibility:	12 kilometres
Cloud:	7/8 1,000 feet with one or two patches about 900 feet

According to an appreciation of the weather subsequently prepared by the Meteorological Office, a trough of low pressure extended from Denmark to North Kent and Devon. The trough was active over Southern England where it remained stationary until 1800 hrs. There was very little low cloud over the French coast but the amounts gradually increased towards the English coast becoming full cover over North Kent with the base from 800 to 1,200 feet, obscuring the hills at times. The cloud over Essex was 6/8 at 1,000 feet with tops at 2,000 feet, and 8/8 at 3,000 feet. The freezing level was 8,000 feet lowering to 6,000 feet over South-East England.

Visibility over the Channel and Essex was 9 kilometres, and 300-1,500 metres over Kent. The wind was mainly from the northeast at about 5 knots.

The following observations were made at stations close to the track followed by the aircraft.

Lydd at 1600 hrs:	Surface wind:	230 degrees 12 knots
	Visibility:	5 kilometres
	Cloud:	4/8 2,000 feet
		7/8 at 4,000 feet

Ashford at 1645 hrs:	Surface wind:	080 degrees 6 knots
	Visibility:	2,300 metres in rain
	Cloud:	3/8 at 600 feet, 7/8 at 800 feet
Doddington at 1755 hrs:	Surface wind:	060 degrees 2 knots
	Visibility:	1,000-2,000 metres
	Cloud:	7/8 at 600 feet

Doddington is about 2 miles away from the accident site and is 300 feet above mean sea level.

On 7 June 1971 when G—APXS left Stapleford Tawney for Le Havre the weather over the entire route was fine. Visibility was about 3-5 kilometres in haze over Southern England but there was no significant cloud.

1.8 Aids to navigation

The route between Le Touquet and Southend is normally conducted with visual reference to the ground and is not defined by radio aids. Southend Airport is equipped with a non-directional beacon (NDB), a very high frequency direction finding facility (VDF) and radar.

The following charts were found in the aircraft;

1:1,000,000 chart of Northern Europe
1: 500,000 ICAO aeronautical chart of Southern England
1: 250,000 chart of Southern England
Jepperson radio navigation chart for the area

1.9 Communications

The aircraft maintained normal radio communication with Le Touquet, Ashford and Southend Approach.

1.10 Aerodrome and ground facilities

Not applicable.

1.11 Flight recorder

Not required, none fitted.

1.12 Wreckage

The terrain in the vicinity of the accident site was flat and covered with either grass or arable crops. The site was 250 feet amsl and lay on the south side of the M2 motorway. Examination of the wreckage at the site showed that prior to impact the aircraft was in a steep diving attitude with the nose at least 45 degrees below the horizontal, heading about 005 degrees magnetic and banked very slightly to starboard. After striking the ground it had bounced forward about 30 feet and had come to rest against a 3 foot high wire fence where it

caught fire. The propeller had become detached on impact; its condition was consistent with it having been under power at that time. A subsequent examination of the engine revealed no pre-crash failure or malfunction. The vacuum pump for the flight instruments was in good condition and its drive intact. No evidence was found of any pre-crash structural failure or of any disconnection of the flying control runs.

The instrument panel was substantially damaged by the impact and subsequent fire but the following information was obtained from the various instrument parts found:

Altimeter:	set at 1012 mb
Airspeed indicator:	reading at impact about 150 mph
Vacuum gauge:	reading at impact about 4inches Hg
Artificial horizon:	indication of gyro rotation at time of impact
VHF radio (comms):	129.95 MHz (damaged by impact and probably moved)
VHF radio (nav):	116.7 MHz.

1.13 Fire

The aircraft was fitted with two fuel tanks, one in each wing, which at the time of the accident would have contained approximately 16 gallons of petrol. Both tanks were ruptured by the impact and fuel was spilled over the wreckage and to a distance of about 30 feet forward. A few seconds after the impact there was an explosion and the wreckage burst into flames. The alarm was received at Sittingbourne at 1737 hrs and the first appliances arrived at the scene fifteen minutes later.

In all six appliances from neighbouring fire services attended but only two were involved in fighting the fire. These used water to extinguish the fire which, however, had nearly burnt itself out by the time that the fire services were able to get to the scene. There was only one small area of persistent fire probably caused by a magnesium wheel casting, which was covered with earth. The fire was extinguished by 1805 hrs.

The wreckage was almost totally consumed by fire and only a small area of fabric on the tailplane remained unburnt.

1.14 Survival aspects

The accident was non-survivable.

1.15 Tests and research

Not applicable.

2. Analysis and Conclusions

2.1 Analysis

The evidence indicated that the aircraft had struck the ground while diving at high speed at an angle of at least 45 degrees below the horizontal and banked slightly to the right. When the aircraft was seen coming out of the bottom of the cloud it was already in the dive. Since the structure was intact, the flying controls in order, and the instruments functioning at the time of impact, it can be inferred that the accident was not the result of some malfunction or failure of the aircraft. The most probable cause of the accident, therefore, is loss of control brought about by the pilot having become disorientated.

Spatial disorientation is a condition in which physiological sensations due to acceleration forces give the pilot a false impression of the aircraft's attitude. These physiological sensations are so strong that the pilot may be persuaded to disbelieve temporarily the indications of his instruments. The combinations of climbing or diving and turning are particularly difficult to deal with. Pilots trained and experienced in instrument flying have learnt to recognise disorientation, to disregard the physical sensations associated with it, and to fly solely by reference to the aircraft's instruments.

The flight on which the accident occurred was uneventful until 1722 hrs when initial radio contact was established with Southend Approach. At this time, although the pilot reported that he was in 'a little bit of cloud' at 1,000 feet over Ashford Town, he seems to have been in full control of the aircraft. However, thereafter the flight continued into an area where high ground rising to 633 feet amsl reduced the space below cloud where visual flight was possible to something less than 400 feet, and eventually the pilot concluded that it would be unsafe to attempt to extricate himself by continued VFR flight. He therefore requested assistance from Southend. The air traffic controller's instructions were appropriate to the situation in that they were aimed at getting the aircraft over the high ground at a safe height from which it could also be identified on the radar screen. Even if the pilot had said that he did not hold an IMC rating it is doubtful if there would have been any alternative course of action available to the controller. It was unfortunate that it was a course of action that involved the pilot in both climbing and turning in cloud.

The coincidence of times and the geographical positions of the radar blip and the witnesses indicate that the manoeuvres observed by the witnesses and the radar operator were parts of the same pattern of flight. This pattern was consistent with that of a pilot who was becoming increasingly disorientated

until a point was reached where the aircraft went into a right hand spiral dive. It would hardly be possible for the pilot already disorientated, to recover from such a condition of flight by reference to his instruments, although there would be no difficulty once the aircraft was clear of cloud and the pilot had regained visual reference. However in this instance there was insufficient height available below cloud for any corrective action of the pilot's to be effective before the aircraft struck the ground.

2.2 Conclusions

(a) *Findings*

(i) The documentation of the aircraft was in order and it had been properly maintained.

(ii) There was no evidence of pre-crash failure or malfunction of the aircraft.

(iii) The pilot held a valid private pilot's licence, but did not hold an IMC rating.

(iv) The aircraft flew into low cloud and poor visibility over high ground.

(v) The pilot became disorientated in cloud while attempting to comply with air traffic control instructions.

(vi) The aircraft went into a spiral dive in cloud; there was insufficient height below the cloud in which to effect recovery when visual reference became once more available.

(b) *Cause*

The aircraft went out of control when the pilot became disorientated in cloud and went into a spiral dive from which there was insufficient height below the cloud for recovery to be made by visual reference.

G M Kelly
Inspector of Accidents

Accidents Investigation Branch
Department of Trade and Industry
June 1972

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