ACCIDENTS INVESTIGATION BRANCH
Department of Trade and Industry

Piper PA 28 Cherokee 140 G-AVBN

Report on the accident at Ruxley, Kent on 30 August 1970

LONDON: HER MAJESTY'S STATIONERY OFFICE
1971

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Department of Trade and Industry
Accidents Investigation Branch
Shell Mex House
Strand
London WC2

14 June 1971

The Rt. Honourable John Davies 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 28 Cherokee 140 G–AVBN which occurred at Ruxley, Kent on 30 August 1970.

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/356

Aircraft:	Piper PA 28 Cherokee 140 G--AVBN
Engine:	Lycoming 0--320--E2A
Owner and Operator:	Surrey and Kent Flying Club Ltd
Pilot:	Mr R Waran -- killed
Passengers:	Nil
Place of Accident:	Ruxley, Kent
Date and Time:	30 August 1970 at 1902 hrs.
	All times in this report are GMT

Summary

The pilot was briefed to practise circuits and landings at Biggin Hill aerodrome but after making a normal take-off he left the aerodrome circuit area. After flying at a low height for about 45 minutes in the Bromley, Chislehurst and Orpington districts the aircraft crashed in a field and the pilot was killed. The investigation concluded that the pilot had been subjected to emotional stress on the day of the accident and that he consumed a considerable quantity of alcoholic spirit after boarding the aircraft. The accident was caused by a loss of skill and judgement on the part of the pilot as a result of intoxication by alcohol.

1. Investigation

1.1 History of the flight

On the day of the accident the pilot telephoned the Surrey and Kent Flying Club at about 1330 hrs and booked an hour's solo flying in a Cherokee aircraft for the flying period between 1745 and 1845 hrs. He arrived at the aerodrome by taxi at about 1750 hrs and told the driver to wait. As he signed the authorisation sheet and collected his microphone he was briefed by an instructor to stay in the aerodrome circuit and practise circuits and landings. The visibility was not considered good enough for a pilot of Mr Waran's experience to go further afield. Having carried out the standard pre-departure checks, he taxied out and took off at 1755 hrs, turned to starboard in accordance with the traffic pattern in force, and left the aerodrome circuit on a northwesterly heading.

Some 15 to 20 minutes later the aircraft was seen flying between Bromley and Beckenham at about 1,000 feet; it was turning steeply right and left, diving and climbing. Manoeuvring in this way it lost height progressively and descended towards Chislehurst to within 200 or 300 feet of the ground. For the next 40 to 45 minutes it flew around Bromley, Chislehurst, Sidcup and Orpington districts at a low height, performing steep turns and semi-aerobatic manoeuvres. During the latter part of this period the air traffic controller at Biggin Hill made several unsuccessful attempts to contact G–AVBN by radio, first to remind the pilot that the aerodrome was shortly due to close down for the day, and then because of a complaint by telephone of a low flying aircraft.

Shortly after 1900 hrs two similar complaints were recorded by the police, and at about 1902 hrs the aircraft was seen flying low across the A20 Orpington to Maidstone road. It pulled up in a right hand climbing turn over some trees bordering a caravan site and then descended, still turning, to strike the ground heavily in a field 300 yards south of the caravan site. The aircraft disintegrated and caught fire. The pilot was killed.

1.2 Injuries to persons

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

1.3 Damage to aircraft

Destroyed.

1.4 Other damage

None.

1.5 **Crew information**

1.5.1 *Qualifications and experience*

Mr Ravi Waran, aged 35, was an experienced flight navigator. He qualified as a private pilot 18 days before the accident after an approved course of instruction with the Surrey and Kent Flying Club. Most of his instructional flying had been conducted in Beagle Pup aircraft. In qualifying for his licence Mr Waran demonstrated an above average ability and because of his considerable experience as a flight navigator his pilot navigation and knowledge of radio navigational aids was superior to that of most student pilots. He went solo on Piper Cherokee aircraft on 13 August 1970 after two dual familiarisation flights.

At the time of the accident he had accumulated a total of 39 hours 25 minutes as a pilot of which 14 hours 50 minutes were in command.

1.5.2 *Medical examination*

When Mr Waran was medically examined for his pilot's licence he omitted to enter the name of his physician on the appropriate form, stating at the time that he had not yet registered. He also signed a declaration that he had had no illness not referred to by the examiner, nor any nervous or mental trouble. After the accident it was established that he was in fact registered with a doctor with whom he had been under treatment for emotional tension, brought about by life stresses, from which he had at times sought relief in heavy drinking. He was described as a highly emotional person.

Had the examiner known of this aspect of his medical history he would have been bound to defer his assessment of Mr Waran's fitness until he had ascertained that the treatment had been successful.

1.5.3 *Immediate pre-flight history*

On the day of the accident a domestic crisis had brought Mr Waran to a state of emotional distress. Left alone by relatives unaware that he had arranged to go flying to took a taxi to Biggin Hill aerodrome, arriving there at about 1750 hrs. To the taxi driver who took him to the aerodrome and to the flying instructor who advised him to stay in the aerodrome circuit he appeared rational in his behaviour and displayed no symptoms of intoxication. He was, however, rather uncommunicative and unlike his usual self.

1.5.4 *Post mortem*

Post mortem examination revealed no evidence of pre-existing disease. Death was due to multiple injuries. Toxicological tests established a carbon monoxide level of about 2 per cent, an amount compatible with ordinary tobacco smoking. The blood alcohol level at the time of death was 313 mg per 100 ml (313 mg per cent), an amount commonly associated with coma.

1.6 Aircraft information

G–AVBN was a Piper PA 28, Cherokee 140, low wing two-seater monoplane powered by a Lycoming piston engine driving a fixed pitch propeller. It had flown 1,724 hours since new. The aircraft had been maintained in accordance with an approved maintenance schedule and its certificate of airworthiness in the transport (passenger) category was valid. All modifications and airworthiness directives had been carried out, and its maintenance records show it had given satisfactory service. At take-off there was sufficient aviation petrol in its tanks for the intended flight.

1.7 Meteorological information

Weather conditions in the Biggin Hill area, reported by ATC were:

Surface wind:	Calm
Visibility:	3 kms in haze
Cloud:	Sky clear
QNH:	1018

The accident occurred about 10 minutes after sunset; light conditions described by eyewitnesses were good.

1.8 Aids to navigation

Not applicable.

1.9 Communications

VHF radio communication between the aircraft and Biggin Hill ATC was satisfactory until the aircraft left the aerodrome traffic pattern; ATC's inability to contact G–AVBN from 1840 hrs onwards was probably due to the low height at which the aircraft was flying during this period.

1.10 Aerodrome and ground facilities

Not applicable.

1.11 Flight recorder

Not fitted.

1.12 Wreckage

The aircraft crashed about 1,400 yards southeast of the Ruxley roundabout on the A20 London to Maidstone road. Inspection at the scene of the accident showed that the aircraft was steeply banked and turning to the right when its right wing-tip struck the ground at the base of a 3 feet high raised dirt road. The impact appeared to have been heavy and at a high forward speed.

Inspection of the wreckage showed that the flaps were up, the horizontal stabilator trim was set approximately neutral, and that the propeller was rotating at considerable speed at the moment of impact. No evidence of pre-crash failure or malfunction was found.

When the main wreckage was lifted for removal an apparently new, broken and empty 13 fluid ounce Cossack vodka bottle was found underneath the area of the rear cabin. The top of the bottle was missing and although the neck was not found some fragments of glass were found adjacent to the bottle. The label on the bottle was undamaged and showed no sign of having been exposed to the elements.

1.13 Fire

Fuel from the disrupted tanks soaked the demolished cockpit and the ensuing fire consumed almost the entire forward fuselage.

1.14 Survival aspects

The accident was non-survivable.

1.15 Tests and research

None.

1.16 Medical aspects

1.16.1 *Physiological effects of alcohol*

When blood alcohol content is raised to the level established in the case under consideration (313 mg per 100 ml) the least effects would be a deterioration in vestibular balance and muscular co-ordination with a marked loss of critical judgement. Blood ethanol concentrations of the order of 300 mg per 100 ml are commonly associated with stupor, although chronic alcoholics have a markedly increased tolerance. Nonetheless, in this case it is inconceivable that the pilot would not have been clinically and noticeably drunk if he had achieved this blood alcohol level before boarding the aircraft.

2. Analysis and Conclusions

2.1 Analysis

Post mortem examination established a blood alcohol content of 313 mg per 100 ml at the time of the pilot's death, a quantity sufficient to reduce the skill and judgement of the most hardened drinker to the point where an accident is almost inevitable. In the absence of any pre-crash defect in the aircraft this would explain the manner in which it was being flown immediately before it crashed and leads to the conclusion that a loss of skill and judgement resulting from alcoholic intoxication was the cause of the accident.

The minimum quantity of spirit of similar proof strength to vodka that would produce a blood content of 313 mg per 100 ml has been calculated to be the equivalent of 15–18 fluid ounces – a little more than one half bottle. It was established that the blood alcohol level was at its peak at the time of death, not diminishing. This means that to have achieved a level of 313 mg per 100 ml without having consumed any alcohol during the flight at least 330 mg per 100 ml would have to have been absorbed into the blood before the flight commenced. If this had been the case it is inconceivable that the taxi driver who brought the pilot to the aerodrome or the instructor who saw him preparing for the flight would have failed to notice symptoms of intoxication. Concentrations of the order of 300 mg per 100 ml are normally associated with stupor. The pilot, therefore, must have taken some alcohol before the flight, but not enough to produce obvious symptoms of intoxication, and must have drunk a half bottle of vodka after boarding the aircraft, probably during the first 30 minutes of the flight.

It is considered that emotional tension brought about by life stresses led to his seeking relief in alcohol.

2.2 Conclusions

(a) *Findings*

(i) The documention of the aircraft was in order and it was properly loaded and trimmed for the flight.

(ii) No pre-crash defect or malfunction came to light that could account for the accident.

(iii) The pilot held a current private pilot's licence properly endorsed, but he had not revealed medical history that could have led to a deferment of his assessment for a pilot's licence at the time of his application.

(iv) As a result of emotional tension brought about by life stresses the pilot consumed a considerable quantity of alcohol during the flight.

(v) Alcohol in the pilot's blood eventually reached a level that inhibited his higher critical restraint mechanism and degraded his skill and judgement to the point where he was unable to avoid the accident.

(b) *Cause*

The accident was caused by a loss of skill and judgement on the part of the pilot as a result of intoxication by alcohol.

G M KELLY
Inspector of Accidents

Accidents Investigation Branch
Department of Trade and Industry
14 June 1971

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