Aviation safety investigations & reports

Partenavia Costruzioni Aeronautiche SPA P68B, VH-IXH

Investigation number:
199802757
Status: Completed

The aircraft operator had been contracted to provide a regular service transporting bank documents, medical pathology samples and items of general freight between Wagga Wagga, Albury and Corowa. On the day of the accident a passenger was accompanying the pilot for the day's flying.

The pilot commenced the flight from Corowa to Albury under the Visual Flight Rules, flying approximately 500 ft above ground level. At Albury he obtained the latest aerodrome weather report for Wagga Wagga, which indicated that there was scattered cloud at 300 ft above ground level, broken cloud at 600 ft above ground level, visibility restricted to 2,000 m in light rain and a sea-level barometric pressure (QNH) of 1008 hPa.

At 1715 Eastern Standard Time (EST) the aircraft departed Albury for Wagga Wagga under the Instrument Flight Rules. The pilot contacted the Melbourne en-route controller at 1728 and reported that he was maintaining 5,000 ft.

Although the aircraft was operating outside controlled airspace, the en-route controller did have a radar surveillance capability and was providing the pilot with a flight information service. However, no return was recorded from the aircraft's transponder and at 1732 the pilot reported that he was transferring to the Wagga Wagga Mandatory Broadcast Zone frequency. This was the pilot's last contact with the controller.

Although air traffic services do not monitor or record the Wagga Wagga Mandatory Broadcast Zone frequency, transmissions made on this frequency are recorded by AVDATA for the purpose of calculating aircraft landing charges. This information was reviewed following the accident.

The pilot broadcast his position inbound to the aerodrome on the mandatory broadcast zone frequency and indicated that he was conducting a Global Positioning System (GPS) arrival. He established communication with the pilot of another inbound aircraft and at 9 NM from the aerodrome, broadcast his position as he descended through 2,900 ft.

Approximately 1 minute and 20 seconds later, the pilot advised that he was passing 2,000 ft but immediately corrected this to state that he was maintaining 2,000 ft. He also stated that it was "getting pretty gloomy" and that according to the latest weather report he should be visual at the procedure's minimum descent altitude. The aircraft would have been approximately 6 NM from the aerodrome at this time. This was the last transmission heard from the pilot.

The resident of a house to the south of Gregadoo Hill sighted the aircraft a short time before the accident. He was standing outside his house and stated that the aircraft was visible as it passed directly overhead at what appeared to be an unusually low height. The aircraft then disappeared into cloud that was obscuring Gregadoo Hill, approximately 350 m from where he was standing. Moments later he heard the sound of an impact followed almost immediately by a red flash of light. The noise from the engines appeared to be normal up until the sound of the impact.

The aircraft had collided with steeply rising terrain on the southern face of Gregadoo Hill, approximately 40 ft below the crest. The hill is 4 NM from the aerodrome and is marked on instrument approach charts as a spot height elevation of 1,281 ft. The estimated time of the accident was 1739.

The pilot and passenger sustained fatal injuries.

Personnel information & licence details

The pilot had obtained a Commercial Pilot Licence in January 1996 followed by an Instructor Rating in August 1996. He was issued with a Command Instrument Rating on 25 February 1998 and commenced employment with the aircraft operator.

Flight experience & logbook entries to 19 July 1998

Total hours 1,013.5 (last 90 days 130.4)
Total command 778.7 (130.4)
Total dual 234.8
Total instructional flying 438.1
Multi-engine command 279.5 (130.4)
Instrument flight 43.5 (16.6)
Night 39.0 (12.9)
Last check 2-4 March 1998, initial route check by company chief pilot

The pilot's logbook indicated that he had completed 22 GPS arrival procedures since commencing operations at Wagga Wagga. This included 15 GPS arrival procedures conducted while inbound to Wagga Wagga, five of which were conducted in marginal weather conditions with significant cloud below 1,500 ft above ground level.

The pilot had a normal rest pattern in the days preceding the accident. There was no reported sleep disruption, evidence of fatigue or other factors which might have affected his behaviour. He had last worked 3 days prior to the day of the accident, on a similar schedule to that of the accident flight.

During post-mortem toxicology testing of the pilot, low levels of amphetamine and metabolites of anabolic steroids were detected. Specialist advice indicated that the effects of such compounds were extremely complex and the extent to which they may have influenced the pilot's performance during the flight could not be determined.

Observed weather conditions at Wagga Wagga

A meteorologist with the Bureau of Meteorology conducted an aerodrome observation at Wagga Wagga shortly before the accident. The wind was a light easterly with visibility reducing to 1,500 m in light rain and mist. Significant cloud was observed in the vicinity of the aerodrome and included 1 octa of stratus cloud at 300 ft above ground level and 5 octas of stratus at 600 ft above ground level.

Wreckage and impact information

At the time of the collision with Gregadoo Hill the aircraft was flying wings-level in an attitude consistent with level flight. The main wreckage came to rest over the crest of the hill, approximately 65 m beyond the initial point of impact.

The cockpit and cabin structure, including the wing centre section, was destroyed. Post-impact fire substantially damaged both wings. Damage to the propeller blades and their associated assemblies was consistent with each engine operating under power at the time of impact.

Aircraft information

The aircraft was equipped with two barometric pressure-sensitive altimeters. The left altimeter was part of the pilot's standard instrument panel. The second altimeter was located on the lower far right of the co-pilot's instrument panel. Both altimeters separated from the instrument panel during impact.

Although the internal mechanism of the pilot's left altimeter had been substantially destroyed, it was possible to obtain the setting of the altimeter sub-scale. Examination of the instrument face did not reveal the presence of any witness marks and the indicated altitude at the time of the accident could not be determined.

The QNH set on the left altimeter sub-scale was 1013 hPa, which corresponded with the forecast area QNH at the time of the accident. The QNH information had been provided to the pilot by the en-route controller. With that setting on the altimeter sub-scale, the instrument would have indicated that the aircraft was approximately 150 ft higher than it actually was. Although there was a 5-hPa difference between the area QNH and the actual local QNH at Wagga Wagga, it was within the normal amendment criteria.

Components of the right altimeter were evident at the accident site. The instrument face had been separated from the case and the pre-impact altitude indication could not be determined, as there were no witness marks evident. The QNH sub-scale was set to 1008 hPa. This setting corresponded with the departure aerodrome's QNH and the actual QNH for Wagga Wagga at the time of the accident. There was no automatic broadcast of weather information provided at Wagga Wagga.

The aircraft pitot static system was extensively damaged during the accident. The position of the selector valve for the alternate static source could not be determined.

As there was an actual QNH available from the automatic terminal information service at Albury, the pilot was required to conduct a check of the aircraft's altimeters prior to takeoff. At least one of the instruments was required to indicate within 60 ft of the nominated elevation. An instrument indicating an error of more than 75 ft was to be placarded as unserviceable for flight under the Instrument Flight Rules and an entry made in the aircraft maintenance release to that effect. There was no evidence that either of the aircraft altimeters was outside these tolerances in the period leading up to the accident.

The ADF (navigation aid) receiver installed in the aircraft was tuned to the frequency of the Wagga Wagga non-directional beacon. The number one VOR (navigation aid) receiver was tuned to the frequency of the Wagga Wagga VOR. The VOR omni-bearing selector was set to a course of 013 degrees and this corresponded with the published magnetic track between Albury and Wagga Wagga.

The aircraft's maintenance release was valid at the time of the accident and no entries had been made in relation to outstanding unserviceable items. It was reported that the pilot would inform the chief pilot of any maintenance action required and that would then be coordinated with the maintenance organisation. The aircraft maintenance records contained no outstanding airworthiness issues.

The investigation team was provided with a hand-written note compiled by the pilot, which listed aircraft defects. The list was to be supplied to the aircraft operator and maintenance organisation for the next period of scheduled maintenance and identified items that the pilot considered could require attention. The team assessed the significance of the list and recovered some components from the accident site for more detailed examination. However, no evidence was available to suggest that the listed items had contributed to the circumstances of the occurrence.

Global positioning system (GPS) and instrument approach

The aircraft was equipped with a GPS satellite receiver and the pilot broadcast on the mandatory broadcast zone frequency his intention to conduct the Albury - Wagga Wagga GPS Arrival. This procedure required the pilot to use distance information supplied by the GPS receiver to conduct a progressive descent as the aircraft approached the aerodrome. A ground-based navigation aid provided azimuth guidance to the pilot. The aircraft's navigation equipment was correctly configured for the procedure.

The last position recorded by the GPS receiver closely matched the actual position of the accident site and indicated that the aircraft had 4.20 NM to run to the aerodrome's VOR navigation aid. The last altitude recorded on the GPS receiver was 1,274 ft. At this stage of the approach procedure, the aircraft should not have descended lower than 2,000 ft. Descent to the minimum descent altitude (MDA) could then be made once the aircraft was within 3 NM of the Wagga Wagga VOR.

The MDA published for the GPS instrument arrival procedure was 1,580 ft, with a required in-flight visibility of 2,400 m. Descent to 1,580 ft would position the aircraft 856 ft above the aerodrome elevation. Prior to departing Albury, the pilot had received the latest weather report of broken cloud at 600 ft above ground level and 2,000 m visibility in the vicinity of Wagga Wagga aerodrome.

Before using the GPS receiver for operations under the Instrument Flight Rules, the holder of an instrument rating was required to complete a course of ground training to a specified syllabus. No record was found of the pilot having completed this training and the pilot's employer had provided no formal training in the use of the GPS equipment installed on the aircraft. As the GPS receiver was not equipped with a current data card, it was not approved for use under the Instrument Flight Rules. The aircraft was not equipped with alternative distance measuring equipment.

The pilot had received an accurate appreciation of the weather conditions in the vicinity of Wagga Wagga prior to departing Albury. At that stage it would have been apparent that low cloud and poor visibility were likely to affect the aircraft's arrival. Under such conditions it would not have been possible to land from the GPS arrival procedure.

As the reported cloud base and visibility were both below the minimum criteria, it is difficult to rationalise the pilot's transmission that, according to the latest weather report, he would be visual at the minimum descent altitude. This statement suggests that the pilot had already made the decision to continue his descent below the minimum altitude for the procedure and to attempt to establish visual reference for landing.

Based on the report of broken low cloud in the vicinity of the aerodrome, the pilot would have needed to descend to 1,324 ft above mean sea level to establish the aircraft clear of cloud. This is within 50 ft of the last altitude recorded on the GPS receiver.

Due to the difference between the actual and forecast QNH, the left altimeter would over-read by approximately 150 ft. At the time of the occurrence an otherwise correctly functioning instrument would have indicated an altitude of approximately 1,400 ft.

The pilot had probably set the right altimeter to the local QNH prior to departing Albury. As this setting also corresponded to the actual QNH at Wagga Wagga, that instrument would have provided the more accurate indication of the aircraft's operating altitude. However, because of its location on the co-pilot's instrument panel, it is unlikely that the pilot would have included that altimeter in his basic instrument scan.

It was not possible to assess the extent to which illicit drugs may have influenced the pilot's performance during the flight and affected his ability to safely operate the aircraft.

1. The pilot was operating the aircraft in instrument meteorological conditions below the approved minimum descent altitude.
2. Low cloud was covering Gregadoo Hill at the time of the accident.

General details

Date:	20 July 1998	**Investigation status:**	Completed
Time:	1739 hours EST		
Location (show map):	7 km S Wagga Wagga, Aero.		
State:	New South Wales	**Occurrence type:**	CFIT
Release date:	07 April 1999	**Occurrence category:**	Accident
Report status:	Final	**Highest injury level:**	Fatal

Aircraft details

Aircraft manufacturer	Partenavia Costruzioni Aeronautiche S.p.A
Aircraft model	P.68
Aircraft registration	VH-IXH

Serial number	186
Type of operation	Charter
Damage to aircraft	Destroyed
Departure point	Albury, NSW
Departure time	1715 hours EST
Destination	Wagga Wagga, NSW

Crew details

Role	Class of licence	Hours on type	Hours total
Pilot-in-Command	Commercial	217.1	1014

Injuries

	Crew	Passenger	Ground	Total
Fatal:	1	1	0	2
Total:	1	1	0	2

Last update 13 May 2014