

ACCIDENT

Aircraft Type and Registration:	Piper PA-28-140 Cherokee, G-ATMW	
No & Type of Engines:	1 Lycoming O-320-D2A piston engine	
Year of Manufacture:	1966	
Date & Time (UTC):	1 November 2007 at 1750 hrs	
Location:	Hinton-in-the-Hedges, Northamptonshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Minor)	Passengers - N/A
Nature of Damage:	Nose landing gear broken, both wing skins damaged, propeller damaged	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	45 years	
Commander's Flying Experience:	152 hours (of which 14 were on type) Last 90 days - 12 hours Last 28 days - 12 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB inquiries	

Synopsis

The pilot considered that the aircraft was low on fuel and he decided to land at an unlit airfield in the dark. He asked a person on the ground to position their vehicle in such a way as to indicate where the aircraft should land; the pilot misidentified this vehicle's lights and landed at the wrong position. Just prior to touchdown the aircraft struck a fuel bowser before falling heavily on its nose landing gear, which then collapsed.

History of the flight

The pilot had bought the aircraft two weeks prior to the accident. On the day of the accident he planned to fly with a friend to Belgium, where he would drop off his friend

and return alone. This was to be his first international flight from the UK, as a pilot, and he purchased a new GPS unit to assist him with the navigation.

At 0630 hrs, the pilot flew, with his passenger, from the aircraft's base at Hinton-in-the-Hedges to Cambridge, landing at 0702 hrs. They refuelled the aircraft, filed a VFR flight plan to Braaschaat Airfield, near Antwerp in Belgium, and set off again at 0747 hrs. As they approached the eastern coast of the UK they encountered some low cloud, so they flew over the sea at an altitude between 300 and 500 ft: the sea temperature was about +13°C. The pilot and his passenger were not wearing survival suits, the

aircraft carried lifejackets, but no life raft, and the aircraft was not fitted with an emergency locator beacon. The pilot reported that he did not have R/T communications with anyone for the sea crossing. As they approached Antwerp he requested radar vectors to Braaschaat, where they landed at approximately 1040 hrs.

Braaschaat is a private airfield and is not a recognised Port of Entry for Belgium. There was some confusion as the pilot had not asked for the necessary prior permission to land there. The local flying club were, however, able to provide fuel, and the aircraft was refuelled to full tanks (approximately 40 imperial gallons). The pilot and his passenger wanted to visit the local town, but since it was a public holiday in Belgium there was no public transport available, they therefore walked into the town. This delay meant that the pilot arrived back at his aircraft later than he had intended and he recognised that some of his return flight would be in darkness. He reported that he asked someone to file a VFR flight plan to Coventry for him at Braaschaat, before getting airborne as quickly as possible to minimise the amount of time he would spend flying in the dark. No flight plan was filed for the return trip to Coventry. The aircraft left Braaschaat at approximately 1350 hrs.

The weather over the North Sea had improved for the return flight, and the aircraft was able to maintain an altitude of between 500 and 1,100 ft. The pilot did not establish R/T communications with anyone whilst crossing the sea. On reaching the UK the pilot attempted to call the London Flight Information Service (FIS), but he received no reply. London FIS did receive the aircraft's initial call, but they were unable to establish communications with the aircraft. The pilot reports that at around sunset, the new GPS unit lost its waypoints; from the GPS recorded track this appears to have been in the area approximately 15 nm south-east of Cambridge. He also reported that

whilst his left fuel gauge appeared to be registering as expected, the right gauge was still indicating full. The pilot thought that he had been using the fuel equally from both tanks, and he therefore concluded that the right tank contents gauge was not working properly. The pilot then circled for 20 minutes while he attempted to rectify the problems with his GPS unit. He was now unsure of his position and was also having some difficulties in reading the aircraft instruments with the aircraft's dim internal lights. After approximately 20 minutes he continued towards Towcester.

The pilot was now so concerned about the aircraft's fuel state that he considered it would be safer to land back at Hinton-in-the-Hedges rather than fly on to Coventry. Since the airfield at Hinton-in-the-Hedges was unlit, he used his mobile telephone to call his son and asked him to position his pick-up truck at the threshold of Runway 06 at Hinton-in-the-Hedges. The pickup truck was fitted with additional rearward facing spot-lights, and the pilot briefed his son to use the vehicle's headlights to illuminate the undershoot, and to use the rearward facing spot lights to illuminate the runway. On reaching the Hinton area, the pilot commenced circling and in the darkness saw what he thought was the vehicle that he was looking for. He made an approach, down to about 50 ft agl, when he realised that this vehicle was in fact a farm vehicle working in a field some distance from the airfield. The aircraft overshot and repositioned back towards Hinton-in-the-Hedges. The pilot then saw more lights, which appeared to him to be car headlights on approximately the right heading and so he made another approach.

Meanwhile, some members of the resident flying club were preparing for a night flight from Hinton-in-the-Hedges. They were near their hangar, which had two illuminated security lights located on

the front door about six feet apart. They saw an aircraft flying so low that they assumed it was trying to land, despite there being no lights on the runway. They had a vehicle loaded with runway lights that they were planning to use for that evening's flight, so they drove their vehicle towards the runway with the intention of getting the aircraft to hold, whilst they quickly placed their runway lights in position. They attempted to contact the aircraft on the Hinton-in-the-Hedges air to ground frequency, but received no reply. They saw a vehicle parked on the threshold of Runway 06 with its headlights on and asked the driver if he had any communications with the aircraft that was trying to land.

The pilot meanwhile had decided to land and he selected 30° flap. He reported that just prior to touchdown he saw the shadow of a fuel bowser ahead and so he applied full power and pulled back on the control yoke. The aircraft's left flap struck a rotating beacon on the top of the fuel bowser, and scraped along the bowser's cabin roof, before the aircraft landed heavily on its nose, approximately 30 m beyond the bowser. The nose landing gear collapsed and the right wing struck the ground yawing the aircraft about 40° to the right. The aircraft then pitched forward, coming to rest with the aircraft's nose and propeller on the ground and its tail in the air. The pilot received a minor cut to his chin. The engine had stopped so the pilot switched off the electrics and vacated the aircraft normally.

The witnesses who were talking to the driver of the vehicle on the threshold, saw the aircraft fly low over their hangar then abruptly pitch up, then down, before it stopped with its tail in the air; they immediately drove over to the aircraft to offer assistance.

An inspection of the aircraft after the accident showed that

the fuel tanks contained sufficient fuel for approximately one hour of flight.

Analysis

A CAA study into the causes of fatal accidents (*CAP 667 - Review of General Aviation Fatal Accidents 1985-1994*) concluded that many accidents are as a result of the decisions that pilots make. It was also common to find a chain of events where one shortcut or example of poor judgement leads to another.

Preparation

When planning an international flight it is necessary to establish the national requirements for the countries that are being visited. Normally, the first landing in a new country should be at an airfield that is a designated Port of Entry and which therefore allows the necessary customs formalities to be completed. It is also necessary to obtain permission, in advance, from any airfield where it is intended to land, which stipulates 'Prior Permission Required'.

Pilots should familiarise themselves with all of the aircraft systems, including such apparently simple systems as the lighting controls, prior to placing themselves in a position where they need to use them. They should also be familiar with the navigational equipment that they intend to use. It would be sensible to practise using the GPS on the ground, and in the air with a safety pilot, before using it as an aid to navigation.

Flying at night requires more preparation and thought than flying during the day. If, because of unforeseen circumstances, a planned daytime flight is delayed such that completing it will involve flying at night, then the best response is not to rush to get airborne, but instead to consider carefully all options, perhaps even deciding to stop the night and continue the next day.

Conduct of the flight

During the flight to Belgium, the aircraft crossed the North Sea at an unusually low altitude for a single engine aircraft. If the aircraft had suffered an engine failure whilst at 500 ft, with no radio contact, the pilot would have had little time to establish radio communications whilst simultaneously preparing the aircraft for a ditching. Nobody would have been immediately aware of his predicament. In the event of a ditching the likely survival times for a person in calm water at a temperature of +13°C, with no liferaft or survival suit, is a little over an hour. Even if the pilot had made a successful distress call, without an emergency locator beacon the rescue agencies would have had little chance of locating a person in the water in less than an hour.

A GPS system should never be used in isolation. The pilot should prepare a map and log in the normal way, and crosscheck the GPS with other navigational cues. If a pilot is uncertain of his position then the CAA advice is to tell someone. Transmit first on the working frequency, and do not mince words: say that you are lost. If there is no working frequency, or it is not possible to make contact on that frequency, then change to 121.5 MHz and make a 'PAN' call.

A pilot should not rely solely on his fuel gauges. Including reserves, this aircraft had approximately five hours endurance with full fuel and an inspection of the aircraft after the accident showed that the fuel tanks contained sufficient fuel for approximately one hour of flight. This accident occurred after four hours of flight when the pilot committed to a dangerous landing in the dark because he was concerned about his fuel state.

Landing at an unlit airfield in the dark is something that should only be done when all other options have been exhausted. A 'PAN' call, made at the time the pilot became unsure of his position, followed by radar vectors, would have allowed the aircraft to land safely at Coventry Airfield in less flying time than it took to arrive at Hinton-in-the-Hedges.

Comment

Ultimately, it seems that this accident was caused by the pilot confusing the security lights on the hangar with his son's vehicle, whilst attempting to land at an unlit airfield. However, during the sequence of events that lead up to this accident there were many opportunities where sound airmanship could have prevented the pilot being faced with such an option.