

AIRCRAFT ACCIDENT REPORT NO 3/2007

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**REPORT ON THE ACCIDENT TO
PIPER PA-23-250 AZTEC, N444DA
1 NM NORTH OF SOUTH CAICOS AIRPORT,
TURKS AND CAICOS ISLANDS, CARIBBEAN
ON 26 DECEMBER 2005**

Aircraft Type:	Piper PA-23-250 Aztec
Serial number:	27-3935
Nationality:	United States of America
Registration:	N444DA
Location of Accident:	1 nm north of South Caicos Airport, Turks and Caicos Islands, Caribbean (N 21° 31' 46" W 071° 32' 37")
Date and Time:	26 December 2005 at 2339 hrs UTC (1839 hrs local) All times in this report are UTC (local times in brackets)

Synopsis

The accident was reported to the Turks and Caicos Islands (TCI) Civil Aviation Department (CAD) on the evening of the 26 December 2005. The following day a request for assistance was made to the UK Air Accidents Investigation Branch (AAIB), under the terms of a pre-existing Memorandum of Understanding. The TCI CAD appointed an Investigator In Charge (IIC) to conduct an investigation in accordance with the provisions of Annex 13 to the International Civil Aviation Organisation (ICAO) Convention. The investigation was conducted by: Mr P Forbes (Investigator-in-Charge), Ms G M Dean (AAIB Operations), Mr P Thomas (Operations), Mr A N Cable (AAIB Engineering) and Mr K Malcolm (Engineering). The USA, as the country of aircraft manufacture and registration, appointed an Accredited Representative from the National Transportation Safety Board (NTSB). Further assistance to the investigation was provided by the manufacturers of the aircraft, the engines and the propellers.

The AAIB Inspectors arrived in the TCI on 28 December 2005. Investigation activities included interviewing witnesses to the accident, obtaining details of the aircraft's and pilot's backgrounds, assessing operational factors, inspecting the accident site and organising the recovery and examination of the aircraft wreckage.

The pilot involved in the accident had purchased the aircraft in the USA and flown it to the TCI on 24 December 2005. The accident occurred two days later on an internal flight at night, within the TCI, with the pilot and three passengers on board. The aircraft was seen to turn to the left shortly after takeoff and then, after only a brief time airborne, it entered a steep descent towards the sea from which it did not recover. All four occupants were fatally injured.

Inspection of the accident site and the wreckage showed that the aircraft had struck the sea at high speed while descending in a nose down and right wing low attitude.

Detailed examination found evidence of a number of pre-impact powerplant anomalies but no signs of pre-impact failure or malfunction of the aircraft or its equipment relevant to the accident.

The pilot held a Federal Aviation Authority (FAA) Commercial Pilot's Licence (CPL). His flying experience was limited and it is quite possible that he had not previously carried out a takeoff at night with limited local environmental lighting. At the time of the accident he did not meet the relevant recency requirements for flight at night with passengers. The evidence indicated that the accident resulted from a loss of control because of the spatial disorientation of the pilot.

The investigation identified the following causal factors:

1. A lack of appreciation by the pilot of the difficulty in executing a turn, very shortly after takeoff, in conditions of almost complete darkness.
2. A loss of control of the aircraft as a result of spatial disorientation.

Two safety recommendations have been made by the TCI CAD.

Findings

1. Five passengers originally intended to travel on the flight; in the event three passengers were on board the accident flight.
2. The flight was delayed and the takeoff was carried out at night.
3. The weather was good but it was almost completely dark, with no moonlight and very little environmental ground lighting visible along the route flown.

4. The pilot was licensed to fly the aircraft at night but had not completed the required number of takeoffs and landings at night in the preceding 90 days and was therefore not allowed to carry passengers at night.
5. The pilot was not qualified to fly a multi-engine aircraft under Instrument Flight Rules, as was required at night within TCI.
6. There was a low level of ethanol present in the toxicological samples from the pilot; it was not possible to determine whether or not this was as a result of his having consumed alcohol at some time before the flight.
7. The pilot had limited night flying experience and possibly none that involved a takeoff into an area without some environmental lighting.
8. After takeoff the pilot would need to have flown the aircraft by sole reference to his flight instruments because of the darkness and absence of environmental lighting.
9. There was a left turn very soon after take off, which was probably carried out intentionally by the pilot; the subsequent flight path was erratic.
10. The aircraft descended into the sea at relatively high speed and suffered severe break-up.
11. Wreckage examination identified a substantial number of engine and propeller assembly errors; none was likely to have contributed to the accident.
12. Detailed investigation found no evidence of failure, malfunction or anomaly of the aircraft or its equipment likely to have been relevant to the cause of the accident.

13. The pilot probably suffered from spatial disorientation as a result of the accelerations during takeoff and the turn very shortly afterwards, leading to a loss of control.

Safety Recommendations

The following safety recommendations have been made by the TCI CAD:

Recommendation 2007-001

It has been recommended that the FAA require that, before flight, variable-pitch propellers receive a full functional ground check following final assembly or re-assembly.

Recommendation 2007-002

It has been recommended that the FAA take measures aimed at ensuring an adequate standard of quality control during repair and overhaul operations on light aircraft engines and propellers.