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Commuter Stalls and Crashes Into Sea During Go-around

A subsequent accident investigation conducted by authorities in Belize determined that the pilot had flown more than 41 hours over the maximum duty time allowed by law, including more than 30 hours in the two and a half days before the accident.

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Tropic Air Flight 80, a U.S.-registered light twin-engine Cessna 402B, was on final approach to San Pedro Airstrip on Ambergris Cay, Belize, on April 1, 1991, when another Tropic Air flight on the ground asked the pilot to go around because of congestion on the airport ramp. A go-around was executed at low altitude with the landing gear and the flaps extended. As the pilot maneuvered for another approach, the airplane stalled and crashed into the sea east of the island airport. The pilot and seven passengers were killed and the airplane was destroyed.

An accident report prepared by the Belize Civil Aviation Department said that while "there is no evidence which permits the investigation to determine with certainty the actual cause of the accident, it is considered a reasonable deduction that the pilot was unfit for flight due to fatigue, [that] he stalled the aircraft while flying a very low downwind with the landing gear down and [that] the aircraft was much too low to recover from the stall."

Tropical Air Service Limited conducted business as Tropic Air, and was based at San Pedro Airstrip. On the day of the accident, the pilot reported for duty early in the morning and departed San Pedro at 0700 hours local time for the Philip Goldson International Airport (30 nautical miles [48 kilometers] southwest of San Pedro), where he landed at 0715. The airplane was fueled, and the pilot departed at 0800 for Flores, Guatemala, a 55-minute flight. He returned from Flores to Philip Goldson International at 1015, and flew additional legs between Philip Goldson International and San Pedro, each taking approximately 15 minutes. The pilot had a rest period of approximately one hour and fifteen minutes at midday, the report said.

At 1421, the pilot again landed at Philip Goldson International, completing his 10th leg of the day. The pilot remained in the airplane on the apron while seven passengers were boarded and their luggage was loaded. After receiving clearance from air traffic control (ATC), Flight 80 took off at 1436 for San Pedro. When the pilot reported that he was 14 miles (22.5 kilometers) northeast of Philip Goldson International, he was cleared by ATC to change to the unicom frequency at San Pedro, the report said.

There is no weather reporting at the San Pedro Airstrip. Eyewitnesses reported visual meteorological conditions in sunlight, with the winds estimated at 10 knots from the north-northwest, and good visibility.

Approaching San Pedro, the pilot broadcast his position on final approach to Runway 6, number two for landing. A single-engine Cessna 207 was ahead and its pilot had broadcast the intention to land. The pilot of a Tropic Air Twin Otter, on the ground, requested that Flight 80 go around to allow the Twin Otter to depart, because the ramp was full. Flight 80's pilot acknowledged, then flew parallel and to the left of the runway. The aircraft turned right across the runway, and flew a right downwind over the water, approximately one-half mile (0.8 kilometers) from the runway, the report said.

"The aircraft was seen by a number of witnesses on the downwind leg, flying at low altitude (less than 200 feet [61 meters]), and slowly descending," said the report. Witnesses also stated that both engines appeared to be functioning, the landing gear was extended, and the flaps were up.

The report said, "The aircraft reportedly descended to less than 100 feet [30.5 meters] and, at a point approximately one mile [1.6 kilometers] from the end of the runway, it was seen heading for a hut on the end of a pier 60 yards [55 meters] from the beach. At this point, the aircraft pulled sharply nose-up, banked left (away from the beach) and continued in a steep left bank, descending until it hit the water left wing first." The aircraft righted itself and sank in water about five feet deep. There was no fire.

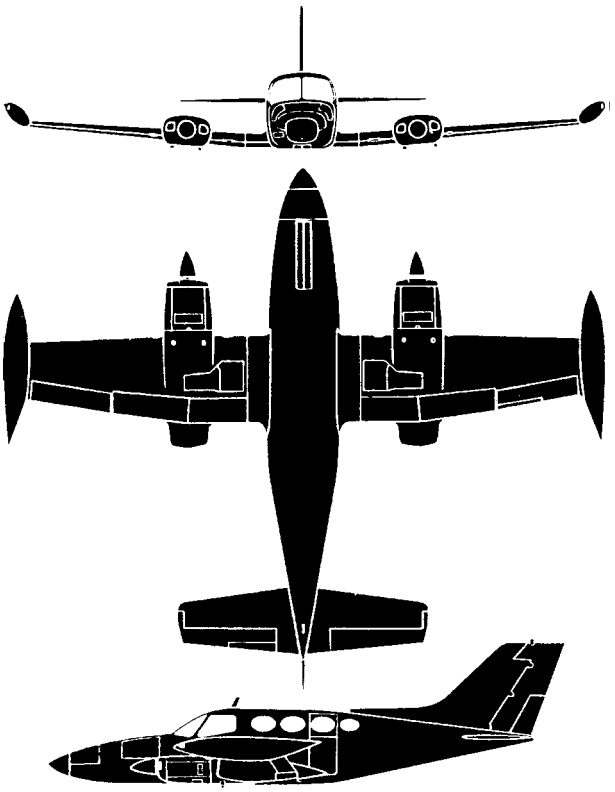
Boats and divers reached the crash site within a few minutes and found the water dark with blood. All occupants were in the aircraft and strapped in their seats, but all were dead. The pilot seats, as well as the seats in rows one and two, were unattached because of substantial disruption of the floor. The seat assembly of row three seats separated above the pedestal. The accident was not survivable, the report said.

"A post-mortem examination conducted at the Belize City Hospital concluded that the occupants died from multiple head injuries, severe brain damage, multiple fractures and ruptured liver and spleen," the report said.

The accident investigation was conducted by the Belize Chief Civil Aviation officer, who was assisted by members of the Belize Defense Force, two investigators from the U.S. National Transportation Safety Board (NTSB), a representative of the U.K. Civil Aviation Authority, a representative from Cessna Aircraft Co. and a representative from Teledyne Continental Motors.

When investigators examined the wreckage, they found that both engines were detached from the airplane, and that the right propeller was separated from its engine. The outer left wing section was broken off. The report said that when the airplane hit the water, it was probably in a left bank of more than 60 degrees. The wreckage area was approximately 40 feet (12.2 meters) in diameter, most of it forward and to the left of the fuselage.

The mixture, propeller and throttle controls were found three-quarter forward. The left fuel selector was in the "Off" position, and the right fuel selector was on "Main." "The final position of these controls are not, however, a reliable indication of their respective selection prior to impact, due both to the likely sequence of events in the crash and the attempts subsequently to recover bodies," the report said.



Cessna 402B

The Cessna 401 and 402 have similar airframes, and the series had the names Utililiner and Businessliner for the six/eight-seat feeder and nine-seat executive versions. Production of the 401 stopped in 1972. Production of the Cessna 402 series ceased in 1987. The 402 Businessliner has a maximum cruising speed at 10,000 feet (3,050 meters) of 189 knots (351 kilometers) per hour and a maximum range of 2,637 kilometers. It has a service ceiling of 26,180 feet (7,980 meters). The accident aircraft was equipped with two Continental TSIO–520E8 engines capable of generating 325 hp each.

Source: *Jane's All the World's Aircraft*

The landing gear was extended, and the flaps were fully retracted, the report said. The needle on the pilot's airspeed indicator was detached. The airspeed indicator on the right side of the instrument panel indicated 90 knots.

"The interior bulkheads in the wing tip (main) tanks showed no sign of 'hydraulicing' (buckling), which would be expected in a crash of this nature if there was substantial fuel in the tip tanks," the report said.

Both engines and propellers were shipped to Teledyne Continental for inspection. "Due to the seized and corroded nature of the rotating components, it was not possible to determine fully the operating condition of each [engine] immediately prior to the crash," the report said. There were no indications, however, of any pre-impact failures. Neither propeller had been feathered, the report said.

The report found that "the maintenance management had demonstrated a lack of control and poor judgment. The deficiencies found on this aircraft could easily arise on other U.S. registered aircraft in the fleet. There appeared to be no effective liaison with Flight Operations. The aircraft should not have been released to service at the time of the accident since it was not maintained to comply with [U.S.] FARs [Federal Aviation Regulations] and had an outstanding [structural] Airworthiness Directive." The report said the Cessna was maintained in accordance with a progressive maintenance program for another aircraft that required 50-hour interval inspections, but the operator instead performed inspections at 75-hour intervals. Noncertified mechanics had frequently signed airworthiness releases for the airplane, the report said.

Investigators were unable to determine whether the accident airplane was properly loaded or within the prescribed center-of-gravity limits, the report said. The report said that the passenger manifest/load sheet was not completed properly, and showed only 130 pounds per adult male passenger and 120 pounds per adult female passenger. This was inconsistent with company procedures that required stating 165 pounds per adult male passenger and 140 pounds per adult female passenger. The luggage was recovered and, when dried, weighed 157 pounds.

The report added: "The control of weight and baggage by ground traffic services is wholly inadequate and results in flight manifests which appear to bear little relation to the actual weight and center-of-gravity conditions on each flight. From the information available, it is possible that the weight at takeoff may have exceeded maximum takeoff weight authorized. It would not have been possible to determine the center-of-gravity for the flight in question."

The report also said that passenger seating allocation was not adequately controlled, and the actual positioning of the passengers on the accident flight was not documented. "Photographic evidence would suggest that the two passengers in row 1 were not as recorded on the manifest," the report said.

The aircraft used 100/130 octane aviation fuel. Because of inconsistencies in the completion of the load sheets, it was not possible to determine the amount of fuel prior to takeoff on the last leg, the report said.

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The qualifications and training of the pilot of Flight 80 were reviewed. The pilot, age 27, was a citizen of Sri Lanka. He held a U.S. commercial pilot certificate for single- and multi-engine land, and an instrument rating. He also held a current U.S. first-class medical certificate, the report said.

During the two days before the accident, the pilot had been on duty approximately 12 to 13 hours per day. On the day of the accident, he had been on duty eight and a half hours. The report said that company records indicated that the pilot had flown 141.5 hours in the previous 28 days, which was 41.5 hours over the maximum permitted by the company and by the Air Navigation Order in force in Belize. "Neither the chief pilot nor the director of operations monitor flight crew hours. This is in conflict with the duties laid down in the operations manual," the report said.

Most of the 141.5 hours flown in the previous 28 days by the pilot were in the accident airplane, the report said. His log book was never found, so his total flight time could not be determined.

A previous written examination taken by the pilot on the Cessna 402B was reviewed. "The pilot had incorrectly answered questions on the fuel system, which would suggest that he had significant gaps in his knowledge of the fuel system operations. No corrective action was recorded," the report said.

"The Chief Pilot and Director of Operations are not providing effective management control in order to secure a safe operation," the report noted. "There does not appear to have been effective liaison and coordination within [the] Flight Operations Department nor externally with Maintenance and Traffic. Control of documentation by the pilots is unacceptably poor."

A tissue sample was taken from the body of the pilot and given to the NTSB for toxicology analysis. The tests did not reveal ethanol in the gastric contents or drugs in the blood, according to the report.

The San Pedro Airstrip facilities were reviewed as part of the investigation. San Pedro has one runway, 6/24, which is 25 feet (7.6 meters) wide and 2,300 feet (701 meters) long. The northeast end of the runway has a paved area of approximately 150 square feet (45.75 meters) for parking, loading and unloading aircraft.

"This aerodrome is often overcrowded, especially on weekends and holidays, when airlines operate additional flights. The day of the accident was Easter Monday, an occasion when many tourists travel to and from the island. During the approach of [Flight 80], the aerodrome was congested," the report said.

The following recommendations were made as a result of the investigation:

- "Until a new [airport] can be constructed with improved facilities at San Pedro, temporary improvements [should be] made at the existing airstrip to provide additional apron space for loading and offloading aircraft;
- "Air traffic control service [should be] provided at San Pedro as soon as possible; and,
- "The requirement for an Air Operator's Certificate [must be] implemented as soon as possible so that all operators of public transport will be required to have and comply with approved operations, flight, training and maintenance manuals." In addition, "proper load sheets [should] be completed prior to the commencement of all public transport flights."

The report said the Civil Aviation Department should contract the services of "suitably qualified inspectors" to conduct periodic flight safety oversight of all aircraft operators. ♦

Editorial Note: This article was adapted from *Belize Civil Aviation Department Accident Report 1/91, Cessna 402, N402BL, Report on Accident at San Pedro, Ambergris Cay, Belize District on 1 April, 1991.*

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