

REPORT ON THE ACCIDENT OF 5Y-WAW AT
MWANZA, TANZANIA ON 8TH DECEMBER 1976

OPERATOR: Credit Finance Corporation Ltd, Miwani Sugar Mills, and Safari Air Services.

AIRCRAFT: Type: Cessna 402B
Nationality: 5Y-WAW

PLACE OF ACCIDENT: In Lake Victoria, WNW of Mwanza, approximately five and a half miles from the shore.

DATE OF ACCIDENT: 8th December 1976 at 0955 hours.

ALL TIMES IN THIS REPORT ARE GMT.

SYNOPSIS

The fact that the aircraft was missing was notified by Air Traffic Control Mwanza on 9th December 1976, search and rescue operations followed. It was 24 hours after the time of the aircraft's departure from Mwanza that pieces of wreckage were recovered from the surface of the lake approximately five miles off shore from Mwanza. There was also an indication of an oil slick on the water in the vicinity.

The pieces of wreckage were later positively identified as having come from 5Y-WAW; but in spite of subsequent salvage operations by the Tanzanian Government, the exact location of the aircraft was not identified and the wreckage remains in a depth of approximately 109 feet of water.

Due to the fact that the wreckage has not been recovered, the investigation is inconclusive, although it would appear that the aircraft struck the surface of the water at a shallow angle. This is indicated by abrasion marks on the lower part of the nose cowl and the manner in which the top engine cowlings were torn from their fastenings.

1. FACTUAL INFORMATION

1.1. History of the Flight

The aircraft was operating a charter on behalf of Caspair Ltd., from Mwanza across the lake to Bukoba, both places being in Tanzania. The aircraft carried a full compliment of nine passengers in addition to the pilot.

Although the weather at the time was clear in the vicinity of Mwanza Airport, there was a severe storm over the lake some four or five miles off shore which has been confirmed by witnesses. The pilot took-off on Runway 30 at 0955 hours and set a direct course for Bukoba. There was no further communication with Air Traffic Control after the normal take-off clearance. Eventually it was only after it appeared that the aircraft had not arrived at Bukoba that search and rescue operations was commenced.

Some 24 hours after departure time pieces of wreckage and an oil slick were sighted in an area approximately five miles off shore.

The wreckage was later identified as having come from 5Y-WAW and efforts were made to establish the exact location of the wreckage by using aero-magnetometer equipment.

1.2. Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	1	9	-
Non-fatal	-	-	-
None	-	-	-

1.3. Damage to Aircraft

The wreckage, which sank in approximately 109 feet of water, approximately 5.5 nautical miles on the 310° radial of Mwanza NDB has not been recovered. The pieces of wreckage which floated to the surface comprised the nose cowl, Port and Starboard top engine cowlings together with small pieces of side cowlings, the oxygen container and one passenger seat. The latter was recovered from the **only body** that floated to the surface some 14 days after the date of the accident.

1.4. Other damage:

None.

1.5. Personnel Information

Commander: Age 44 years.

Licence: Commercial Pilot's Licence valid until 29th December, 1976.

Aircraft ratings (Group 1): Light single and twin engine aircraft including Cessna 401 and 402.

Instrument ratings: Valid to 27th December 1976.

Medical Certificate: Valid to 29th December 1976.

Flying experience

Total time as pilot: 6,346 hours

Time in last 28 days: 23 hours 35 minutes.

1.6. Aircraft Information

The aircraft is a twin engine land plane powered by two continental TS10-520 engines.

(a) Airframe:

Date of manufacture: February 1976.

Certificate of Airworthiness (C of A): Transport Category, (Passenger) valid until 19th August, 1977.

Certificate of Maintenance issued on 2nd December 1976 valid until 16th January, 1977.

Total flying hours: 1. since new: approximately 200 hours.
2. since last check 1: approximately 18 hours.

maximum weight authorised	6,300 lb.
Weight at take-off:	Computed weight for 10 persons, baggage and half fuel, 6,449 lbs.
Centre of Gravity limits:	+ 150.8 + 159.7 at 6300 lbs.
Accident Centre of Gravity:	Within Limits.
(b) Engines:	Two Continental TS10-520-E
Serial number:	Port 502878 Starboard 502864
Time since new:	Approximately 200 hours
Since last check 1:	" 18 hours.
(c) Propellers:	MacCauley 3AF32C87/82NC-515
Serial number:	Port 755896 Starboard 757637
Time since new:	Approximately 200 hours
Since last check 1:	" 18 hours

1.7. Meteorological Information

The meteorological report for Mwanza area at the time of the accident was 0900 hours Surface wind 180/05 1010 hours 360/20
 Visibility 40 KM Cloudy
 Cloud P/Cloudy Dist: PPTN
 ¾ CU 28,00 Thunderhead
 TR CB 3000 CU 2000/ICB2000
 Temperature 27.5 OC 23 OC
 QNH 1016 MBS 1016 MBS

Actual conditions at Mwanza Airport were clear with a heavy storm reported over the lake approximately four to five miles out from the shore.

The accident occurred in day-light.

1.8. Aids to Navigation

The effectiveness at the navigational aids was not a factor in this accident.

1.9. Aerodrome and Ground Facilities

The aircraft was operating in visual flight conditions and left Mwanza Airport apparently on a direct course to Bukoba, which course would take the pilot towards the storm over the lake. Normal communications existed between the aircraft and the control tower on 118.1 Mhz for take-off clearance procedures. After take-off there was no further communication between the aircraft and the control tower.

1.10. Aerodrome and Ground Facilities
Not relevant.

1.11. Flight Recorder
Not fitted and not required.

1.12. Wreckage

The main wreckage of the aircraft was lying in 109 feet of water approximately five and half miles out from the shore on the 310° radial from Mwanza NDB. A few small pieces or wreckage, which had become detached on impact, floated on the surface. These comprised the nose cowl, the Port and Starboard tip engine cowlings together with small pieces of side cowlings, and the oxygen bottle which was located in the forward nose compartment. Some 14 days later a body of one of the passengers was recovered, still strapped to a passenger seat, from the shore of the lake adjacent to Mwanza.

Some 3 to 4 days after the accident occurred efforts were made by the Tanzanian Government to positively locate the wreckage with the view to possible salvage. However, due to the depth of the water, the extremely muddy bottom with practically nil visibility and lack of proper equipment, these attempts were unsuccessful and after five days the operation was called off.

1.13. Medical and Pathological Information

The commander last under-went a medical examination on 23rd June 1976 and his Medical Certificate was valid until 29th December, 1976. The result of this medical examination was satisfactory in every way.

The one body that floated to the surface had been submerged for 14 days/was in an advanced stage of decomposition and the \angle and pathological information was therefore of little use to the investigation.

1.14. Fire

There was no fire.

1.15. Survival Aspects

The accident was not survivable due to the severity of the impact when the aircraft hit the water. The impact was sufficient to rupture one of the passenger seats in the second row which broke off at the top of its plastic attachment column, immediately beneath the seat. This seat together with the body of the passenger strapped in it, eventually detached itself from the wreckage and floated to the surface, to be eventually recovered some 14 days later.

1.16. Tests and Research

Nil.

2. ANALYSIS

The disappearance of the aircraft within minutes of take-off, without witnesses and without any RT communication or emergency transmissions from the commander, would indicate that whatever happened was both immediate and catastrophic. The physical evidence of the pieces of wreckage that were recovered from the area in which they were found floating on the lake surface, bear out the fact that the aircraft struck the water in virtually level flight or in a very slight nose-down attitude.

There is evidence from witness' reports that a severe storm existed approximately five miles off shore and its position was on the direct track Mwanza/Bukoba. These storms over Lake Victoria are well known and can cover an area of some 40 square miles and can be extremely violent. The commander of 5Y-WAW was a very experienced and qualified pilot and had flown a considerable number of hours around and over Lake Victoria.

It is known that this particular flight was being carried out at the request of another air charter company and was being fitted in with 5Y-WAW's normal routine. This may have had a bearing on the commander's decision to take a direct track Mwanza/Bukoba, intending possibly to fly beneath the storm, rather than go round it. It is believed that he had been known to do such an exercise on previous occasions as in fact, had a number of other professional pilots in the past.

From the evidence of other professional pilots who have flown in similar conditions, they all agree that, when flying under such conditions practically all visual reference can be lost due to the heavy rain and darkness and in some cases pilots have found themselves inadvertently within a few feet of the surface of the water. They also confirm that in these conditions severe turbulence can be present. During these storms the surface of the lake in the vicinity becomes extremely rough and breaking waves of three or four feet high are not unusual.

There is therefore always the possibility that, on this particular flight, due either to severe turbulence or the loss of visual reference 5Y-WAW struck the surface of the water whilst the commander was flying at a low attitude just above the surface of the lake beneath the storm. This could have had the effect of causing the abrasion marks which were found on the underside of the nose cowl and in addition would rip the top engine cowlings off backwards as the aircraft entered the water. The immediate and severe de-acceleration would, in all probability, cause instantaneous death to all on board.

From experience in respect of other similar accidents, where aircraft have struck the surface of water in an approximately normal flying attitude, the extent of damage caused by impact is consistent with that found on the components from 5Y-WAW found floating on the lake surface.

In view of the fact however that it was not possible to positively locate and salvage the wreckage, no final conclusions can be drawn and the report must therefore, remain inconclusive.

3. CONCLUSIONS


(a) Findings

- (i) The pilot was properly licensed and experienced on the type.
- (ii) The aircraft had been maintained in accordance with an approved maintenance schedule and its documentation was in order.

- (iii) The aircraft had carried out a successful take-off from its last point of departure but failed to reach its destination.
- (iv) The aircraft was marginally above permissible all-up-weight and had sufficient fuel on board for the flight.
- (v) After normal RT communication between the aircraft and the control tower during the take-off sequence there was no further communication from the pilot.
- (vi) An oil slick and pieces of wreckage, that were later positively identified as coming from 5Y-WAW were located floating on the surface of the water of Lake Victoria approximately five miles off shore from Mwanza.

(b) Cause

The accident appears to have been caused by the aircraft striking the surface of the water in either a normal flying, or slightly nose-down, attitude. The exact reason for this has not been able to be established as the main wreckage has not been recovered.



D.C. Stewart

CHIEF INSPECTOR OF ACCIDENTS

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