

CAV/ACC/13/69

EAST AFRICAN COMMUNITY,
ACCIDENT INVESTIGATION BRANCH,
P.O. BOX 30163,
NAIROBI.

AUGUST, 1969

The Secretary General,

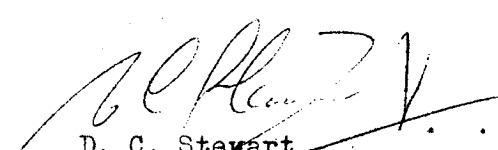
Sir,

I have the honour to submit a report by Mr. P.J. Adams, Inspector of Accidents, into the circumstances of the accident to Piper PA 30 aircraft, registration No. 5H-MNM, which occurred at Dar-es-Salaam Airport, Tanzania.

I have the honour to be,

Sir,

Your obedient servant,


D. C. Stewart

CHIEF INSPECTOR OF ACCIDENTS

PCS/NAM

CAV/ACC/13/69

ACCIDENT INVESTIGATION BRANCH

CIVIL AIRCRAFT ACCIDENT

Report on the accident to Piper PA30
Aircraft Registration number 5H-MNM
which occurred on 3rd July, 1969
at Dar-es-Salaam Airport,
Tanzania.

EAST AFRICAN COMMUNITY

ACCIDENT REPORT
ACCIDENT INVESTIGATION BRANCH

Civil Aircraft Accident Report No. CAV/ACC/13/69

AIRCRAFT: Piper PA30 5H-MNM ENGINE: Lycoming IO-320-BIA.
REGISTERED OWNER AND OPERATOR Tim Air Charters (T) Ltd. P.O. Box 804,
Dar-es-salaam, Tanzania.
PILOT: Mr. C.R.W. Atty - uninjured
PASSENGERS: Three - uninjured
OTHER PERSONS AFFECTED: none -
PLACE OF ACCIDENT: Dar-es-Salaam Airport - Tanzania
DATE AND TIME: 3rd July, 1969, at approximately 0430

ALL TIMES IN THIS REPORT ARE G.M.T.

SUMMARY

Following a take-off from Dar-es-Salaam airport, Tanzania, the pilot experienced a malfunction which prevented the undercarriage from being retracted. On returning and landing at Dar-es-Salaam airport the starboard main leg and the nose leg collapsed. No fire broke out and there were no injuries.

1. INVESTIGATION

1.1. History of the Flight

The pilot, Mr. C.R.W. Atty filed a VFR flight plan at approximately 0400 hours on 3rd July, 1969 for a flight from Dar-es-Salaam to Mufindi. There were three passengers aboard the aircraft.

After carrying out a pre-flight check including engine runs, the pilot obtained traffic clearance, and was given permission to take-off from runway 23 at Dar-es-Salaam Airport. The take-off was normal in all respects.

On becoming airborne the pilot selected undercarriage 'UP'. The selector stayed in the 'UP' selection, but the amber light indicating that the undercarriage was in a locked-up condition did not illuminate. Through the viewing mirror on the port engine cowling the pilot observed that the undercarriage was still in an extended condition. Several trial selections were made, and although the lever action seemed normal no retraction was achieved.

The pilot advised Dar es Salaam control tower that he was unable to retract the landing gear, and requested permission to return to the airfield. The pilot carried out a check of the circuit breaker panel and determined that all circuit breakers were in an untripped condition. There were no green lights illuminated to indicate that the undercarriage was in a locked 'DOWN' condition.

A low pass was carried out near the Dar-es-Salaam control tower to try to ascertain the position of the landing gear. The pilot was advised by the controller that the undercarriage appeared to be "normally down", and was then requested to make a right turn to clear traffic. The pilot flew to an area south of the airfield and removed the emergency gear inspection panel to carry out a visual inspection of the undercarriage motor and pulley rods. In the opinion of the pilot everything appeared to be normal with the landing gear in the 'DOWN' condition. Wing rocking and pitching the aircraft produced no noticeable movement of the nose leg which appeared to be in a locked down condition. The pilot did not make use of the emergency manual undercarriage extension mechanism.

An approach was made for a landing on runway 23 at Dar-es-Salaam airport. Prior to touch down the pilot decided to stop the engines and cut the throttles and the mixture controls.

As the aircraft touched down the starboard main undercarriage and the nose leg collapsed. The aircraft veered to the right and came to a halt approximately 1500 feet from the threshold of runway 23 and approximately 40 feet from the runway edge.

The pilot turned off all switches and fuel cocks and evacuated the passengers and himself.

1.2. Injuries to Persons

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Non-fatal	-	-	-
None	1	3	

1.3. Damage to Aircraft

The nose section of the aircraft forward of the nose bay rear bulkhead was severely damaged, together with the nose wheel doors.

The starboard fuel wing tip tank was damaged beyond repair and slight skin wrinkles were apparent on the top surface of the starboard wing. Both Port and Starboard propellers were bent backwards at the tips over a distance of about eight inches, and these were severely scuffed and likely to prove beyond economical repair. Both Starboard and Port engines were shockloaded although the engine mounting frames appear to have suffered no damage.

1.4. Other damage

None.

1.5. Crew Information

The pilot, Mr. Christopher Robert Welby Atty, aged 22 years is the holder of East African Civil Pilots Licence No.804(K734) issued on 12th July, 1967. This licence is valid until 26th September, 1969, and is endorsed for Cessna 172, 205, 206, 210 and 337 aircraft; and for Piper PA 23 and PA30 aircraft under Part 1. Mr. Atty also holds East African R/T operators licence No. 872(K768) issued on the 25th July, 1966 and valid in line with the C.P.L. described above.

At the time of the last application for renewal of licence, dated 17th June, 1969, the pilot had flown a total of 1545 hours and 10 mins. of which 1455 hours and 50 minutes were as pilot in command. The total hours flown on the accident type amount to approximately 255.

1.6. Aircraft Information

The aircraft, a Piper PA30, serial number 30-1475, was constructed by the Piper Aircraft Corporation, Lockhaven, United States of America, in 1967.

The aircraft arrived in East Africa in possession of an F.A.A. Certificate of Airworthiness for Export serial No. E 75235 and dated 27th February, 1967.

An East African Certificate of Airworthiness in the Public Transport Passenger category (No.102) was issued on the 10th April, 1967. The aircraft was at that time registered as 5Y-AGB. On the 13th September, 1967 the aircraft was re-registered in Tanzania with the present registration. The Certificate of Airworthiness has remained valid by subsequent renewal, and the last renewal was made on the 11th April, 1969, valid until 10th April, 1970.

At the time of the accident the aircraft had flown a total of 819 hours since manufacture, and 108 hours since the last Certificate of Airworthiness renewal.

The aircraft has been maintained to an approved maintenance schedule, and at the time of the accident a valid certificate of maintenance was in force.

Three previous instances of undercarriage malfunction have been recorded in the Technical Log for the aircraft. All these instances have indicated failure of the undercarriage solenoid, but these have, in all cases, been correctly certified on the completion of the rectification.

1.7. Meteorological Information

Weather conditions were good, and are not considered to have any bearing on this accident.

1.8. Aids to Navigation

Not applicable to this investigation.

1.9. Communications

Ground to air communications were satisfactory, and are considered not applicable to this investigation

1.10. Aerodrome and Ground Facilities

Not applicable to this investigation.

1.11. Flight Recorders

No recorder was fitted, or required to be fitted.

1.12. The Wreckage

Not applicable - Refer to para 1.3. (Damage to aircraft) of this report.

1.13. Fire

There was no fire

1.14. Survival Aspects

The pilot and passengers were strapped into the aircraft and there were no injuries.

1.15. Test and Research

The aircraft was raised, and the starboard main leg and the nose leg extended and locked manually. The aircraft was raised on jacking equipment to check the undercarriage function.

With electrical power on, there was no position indication lights for the undercarriage and retraction could not be initiated.

The undercarriage solenoid was then bridged and all indication lights were functioning. With the solenoid in the bridged condition a partial retraction of the undercarriage was carried out. This was only a partial retraction, due to the damage to the aircraft, but was sufficient to prove the integrity of the system.

2. ANALYSIS AND CONCLUSIONS

2.1. Analysis.

Due to the identical physical appearances between the undercarriage solenoid and the solenoid used in the engine starting circuit, emphasis was placed on the identification of the defective item removed from the damaged aircraft. This was of the correct Part No. for the undercarriage circuit. (see observation at the end of this report)

It is most probable that failure of the solenoid occurred co-incident with the breaking of the undercarriage down locks on the starboard main leg, and the nose leg.

2.2. Conclusions.

(a) Findings

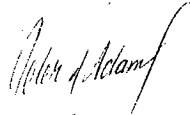
- i) That the documents for the aircraft were in order.
- ii) That the aircraft weight and centre of gravity was within limits at the time of the accident.
- iii) That the aircraft had been certified as having been properly maintained
- iv) That the undercarriage solenoid failed during the initial movement of undercarriage retraction.
- v) That the pilot of the aircraft was properly licensed.
- vi) That damage to the aircraft could have been avoided had the pilot made use of the emergency manual undercarriage extension mechanism

(b) Cause

The accident was caused by the failure of the pilot to appreciate the situation and to utilize the emergency undercarriage lowering system as a precaution, following the failure of the undercarriage solenoid.

OBSERVATION

During the investigation it was discovered that the later production models of undercarriage solenoids have been manufactured with terminal sizes differing from those used for the starting circuit.



P. J. ADAMS

INSPECTOR OF ACCIDENTS