

CAV/ACC/1/70

ACCIDENT INVESTIGATION BRANCH

CIVIL AIRCRAFT ACCIDENT

Report on the accident to Piper PA.23-250
Registration Number 5X-UVG which
occurred on the 15th January,
1970 on Mwanza Airstrip,
Tanzania.

E A S T A F R I C A N C O M M U N I T Y

ACCIDENT REPORT

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Civil Aircraft Accident Report No. CAV/ACC/1/70

AIRCRAFT: Piper PA.23-250 ENGINE: Two Lycoming O-540.
5X-UVG .

REGISTERED OWNER
AND OPERATOR: Safari Air Services Ltd & Caspair Ltd.,
P.O. Box 1951, Nairobi.

PILOT: Captain R. D. Marley - uninjured

PASSENGERS: Two - - uninjured

PLACE OF ACCIDENT: Mwanza Airstrip, Tanzania.

TIME AND
DATE AND TIME: 15th January, 1970 at approximately 06.46 hours

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

S U M M A R Y

On landing at Mwanza Airstrip after a flight from Entebbe, Uganda the aircraft crashed on the runway in a wheels 'up' configuration. There were no injuries to the pilot or passengers and fire did not break out.

1. I N V E S T I G A T I O N

1.1. H i s t o r y o f t h e F l i g h t

Aircraft departed Entebbe at 0615 hours on a charter flight carrying 2 passengers en route to Mwanza with Captain Marley in Command. The flight was uneventful except for bad weather. On approaching Mwanza, the pilot received a reply to his transmission to Mwanza Control which was not understood, the pilot then elected to fly over the field at altitude to check the field, and wind direction. When approaching the field the pilot received instructions to come directly in on finals and was cleared to land. At that instant the pilot was above his approach path and commenced a rapid descent making a flap and landing gear selection simul taneously, the flaps extended but the landing gear remained in the UP position resulting in a crash landing on the runway. The aircraft came to rest approximately 300 yards from the threshold of runway 12

and settled on the hard shoulder to the left of the runway. Landing, approach and touch down appeared to be to the left of the runway centre line, nose wheel marks and aerial debris found about 80 yards from where the aircraft settled and approximately 10 yards to the left of the centre line. Flap marks were found about 40 yards from where the aircraft settled on the edge of the hard shoulder.

1.2. Injuries to Persons

Injuries	Crew	Passengers	Others.
Fatal	-	-	-
Non-Fatal	-	-	-
None	1	2	-

1.3. Damage to Aircraft

Fuselage: Keel section, skin, panel and support structure damaged, aft of main spar, minor damage to skin and structure where aeriels and antennae have been damaged.

Flaps (P & S): Damage at inboard trailing edge area, skin and ribs, general distortion of skin panels.

Propellers (P & S): Both blades damaged and bent rearwards, damage consistent with engine operating in a low power setting at time of impact.

1.4. Other Damage

None.

1.5. Crew Information

The pilot, Mr. Richard David Marley, aged 29 years is the holder of an East African Commercial Pilot's Licence No. 1035 (K.935) issued on 18th September, 1969 and avalid until 16th September, 1970. The licence is rated for Cessna 150, 172, FR 172, U.206A and 337 aircraft and Piper PA.23 aircraft (not exceeding 5,000 lb M.G.W.A.) under Part 1. Mr. Marley also holds an East African FR/T Operator's Licence No. 1906 (K.1384) issued on 18th September, 1969, and valid until 16th September, 1970.

At the time of his application dated 13th May, 1970 for renewal of his licence Mr. Marley claimed the following flying experience.

529.15 hours pilot in command by day
 6.42 hours pilot in command by night
 189.28 hours dual by day
 8.10 hours dual by night

Total 733.35 hours Flying experience

1.6. Aircraft Information

The aircraft, a Piper PA.23-250, constructor's No. 27-210 powered by two Lycoming O-540 engines was constructed by the Piper Aircraft Corporation, U.S.A. on 6th July, 1960.

The aircraft arrived in East Africa in possession of an F.A.A. Certificate of Airworthiness Domestic and was registered N. 4681P. An East African validation C of A. No. 32 was issued on the 17th November, 1967. This certificate has been renewed, and at the time of the accident was valid until 28th December, 1970. The aircraft was certificated in the Transport Category Passenger.

Maintenance History: The aircraft was maintained in accordance with its approved maintenance schedule, reference SAS/ALA/Issue 1, and all maintenance required by this schedule had been complied with. At the time of the accident the following hours had been recorded.

Airframe total hours since manufacture	3175.00
" " " " Check 3	20.3
Engine hours since overhaul Port	897.0
" " " " Stbd.	117.7
Propeller hours since overhaul Port	400.5
" " " " Stbd	400.5

A Certificate of Maintenance was issued on completion of Check 3 inspection and was valid at the time of the accident.

1.7. Meteorological Information

No meteorological observations were made other than a statement by the pilot that he was experiencing bad weather on the approach to Mwanza.

1.8. Aids to Navigation

Not applicable to this report.

1.9. Communications

The flight plan was received by Air Navigational Services, Mwanza on 14th January at 1402Z and the departure signal was received on the 15th January at 0554Z. At the time of the accident the Officer-in-Charge of the Airfield Control Mr. A.F.K. Musoke was not present in the Control Tower. On receiving a call from the aircraft, Communications Assistant Mr. Robins made an unauthorised transmission in acknowledgement which was not understood by the pilot who then elected to fly over the airfield to make a visual assessment before landing.

1.10. The Airfield

Mwanza airfield, situated to the North of Mwanza, Tanzania, Runway 12/30 is 1,470 yards in length at an elevation of 3,759 feet above sea level.

1.11. Flight Recorders

Not applicable to this accident.

1.12. The Wreckage

See para. 1.3. Damage to Aircraft.

1.13. Fire

There was no fire.

1.14. Survival Aspects

There was no injury to either pilot or passengers.

1.15. Tests and Research

The hydraulic and landing gear systems were subjected to a detailed investigation to determine the cause for the failure of the landing gear to lower in this instance. The aircraft was placed on jacks and hydraulic test rig connected to the aircraft system. The level of fluid in the aircraft hydraulic reservoir was checked and it was found possible to add approximately 0,3 Imperial pints, this amount is considered to be normal in accordance with servicing experience. Numerous retraction tests were carried out on the normal system and emergency lowering system, no faults were revealed during these tests. Examination of the hydraulic cylinders revealed no leaks or malfunctioning. The mechanical arrangement of the landing gear system was checked and all mechanisms, clearances and dimensions found to be in accordance with the manufacturer's requirements.

The following checks on operating pressures were made and all results were within the tolerances as permitted by the manufacturer.

Test	Tolerance	Observed Result
Main P.R.V.	1250-1300 psi	1300 psi
Lever Release Press	1150-1200 psi Flap	1150 psi L/G 1200psi
Ext. Times	L/G	6 sec.
Ext. Times	Flap	3 secs.

During the landing gear tests the landing gear position lights functioned correctly as did the flashing warning light in the landing gear selection lever. A fault in the warning horn was found and this was rectified during repairs to the aircraft. A Check 2 inspection was carried out on this aircraft on 22.12.69 during which time the hydraulic power pack was replaced with a factory re-conditioned unit. Also the nose and main landing gear cylinders resealed and tested, and the flap cylinder resealed and tested. Landing gear rigging was checked and retracting tests carried out satisfactorily.

On completion of the repairs to the aircraft structure and flying control surfaces, the aircraft was air tested and all systems functioned normally.

2. ANALYSIS AND CONCLUSIONS

2.1. Analysis

2.1.1. Factors leading to the Accident

On approaching Mwanza the pilot made a transmission in the usual manner but the reply was not understood, this was because Mr. Robins, a communication assistant was making an unauthorised transmission to the pilot warning him of the absence of the airfield controller. Captain Marley, not understanding the transmission, from the tower elected to fly over the airfield to carry out a visual check of the airfield conditions. A second transmission, also unauthorised, was made by Mr. Robins telling Captain Marley to come directly in on final approach, as the aircraft was above the normal approach height. Captain Marley descended rapidly selecting a flap position and landing gear down simultaneously.

The arrangement of the flap and landing gear selectors in the hydraulic system is such that in a case where both selector valves are moved simultaneously the landing gear lowering cycle will be completed before oil is ported to the flap selector. However, in this instance this sequence of operation did not take place, and the reason for this cannot be established. All tests carried out on the hydraulic system proved the system to be serviceable and no faults could be found or reproduced. Examination of aircraft maintenance records showed that the aircraft had suffered intermittent hydraulic faults during the 2 weeks previous to the accident.

During tests on the landing gear system it was found that the landing gear warning horn was not working at the time of the accident.

2.1.2. Loading

The aircraft was properly loaded and the gross weight and centre of gravity were within the limitations as prescribed in the weight and balance reports for this type of aircraft.

2.2. Conclusions

(a) Findings

1. The aircraft had a valid Certificate of Airworthiness and a valid Certificate of Maintenance.
2. It had been properly maintained in accordance with its approved maintenance schedule and all the requirements of the East African Air Navigation Regulations, 1965.
3. It was properly loaded and its gross weight and Centre of Gravity were within the prescribed limits.
4. Its fuel tank carried sufficient fuel for the proposed flight.
5. The pilot held a valid licence and was correctly rated for this type of aircraft.

(b) Cause

It is concluded that the probable cause of the accident was due to pilot error in that the pilot did not check that his landing gear was in the down and locked position, having made the 'down' selection. The pilot's attention was distracted by the Assistant Controller making unauthorised transmissions and to compound the pilot's problems at that instance, the landing gear aural warning was unserviceable.

K. R. Grant,
K. R. Grant,

INSPECTOR OF ACCIDENTS