

CAV/ACC/22/70

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

ACCIDENT INVESTIGATION BRANCH,
P.O. BOX 30163,
NAIROBI.

OCTOBER, 1970

The Chairman,
Communications Council.

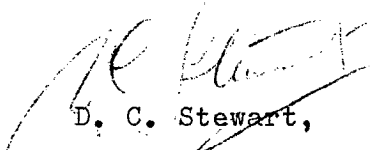
Sir,

I have the honour to submit my report into the circumstances of the accident to Cessna 206, Aircraft Registration Number 5Y-KTV, which occurred on the 22nd June, 1970 seven miles East of Monduli Village, Arusha District, Tanzania.

I have the honour to be,

Sir,

Your obedient servant,


D. C. Stewart,

CHIEF INSPECTOR OF ACCIDENTS

DCS/MWT

CAV/ACC/22/70

ACCIDENT INVESTIGATION BRANCH

CIVIL AIRCRAFT ACCIDENT

Report on the accident to Cessna 206
Aircraft Registration Number 5Y-KTV
which occurred on the 22nd June,
1970 seven miles east of
Monduli Village, Arusha
District, Tanzania.

EAST AFRICAN COMMUNITY

ACCIDENT REPORT

ACCIDENT INVESTIGATION BRANCH

Civil Aircraft Accident Report No. CAV/ACC/22/70

AIRCRAFT: Cessna 206 5Y-KTV.
ENGINE: Continental IO-520-A

REGISTERED OWNER: Wilkenair (Malindi) Ltd., P.O. Box 133, Malindi.

OPERATOR: A. F. PALFREY

PILOT: A. F. PALFREY - Killed

PASSENGERS: Two - Killed

PLACE OF ACCIDENT: Seven miles east of Monduli Village, Arusha District, Tanzania.

DATE AND TIME: 22nd June, 1970 at approximately 0700 hours.

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

S U M M A R Y

The aircraft had taken off from Ngare Nairobi on a private flight to Manyara via Arusha. The pilot intended to call at Arusha to pick up a further passenger but was unable to fly direct due to bad weather.

Accordingly he tried to approach Arusha from the North West, over high ground, and it would appear that at a distance of approximately 7 miles East of Monduli Village, Arusha district, having failed to break cloud, the pilot appeared to have executed a 180° turn to retrace his flight path. However, the aircraft flew towards rising ground, which it struck. It caught fire after impact and was destroyed.

1. INVESTIGATION

1.1. History of the Flight

Little is known of the history of the flight as no Flight Plan was filed, and was not necessary, and no radio communications were received from the aircraft.

The aircraft departed Ngare, Nairobi at 0412 carrying two passengers on a flight to Arusha with the intention of uplifting a third passenger and possibly fuel for an onward journey to Seronera.

The aircraft flew into rising ground in a wings level, climbing attitude, on a heading of approximately 320°M at an altitude of approximately 5,500 feet a.m.s.l., up a valley running in a north/south direction originating in the Monduli Range to the North of the accident site.

The aircraft struck rising ground with a gradient of approximately 1:6. The nose wheel leg became detached at the point of impact and the aircraft ploughed up the slope, still in a wings level attitude for 60 yards when it turned over on its back and caught fire and, with the exception of the engine and propeller, and parts of the wings and empennage, was completely destroyed by fire.

The time at which the accident occurred could not be established accurately but, by deduction, was probably around 0440.

It is known that the area where the accident occurred was almost completely covered with very low cloud and visibility was reduced by rain.

1.2. Injuries to Persons

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

1.3. Damage to Aircraft

Destroyed.

1.4. Other Damage

None.

1.5. Crew Information

Mr. Arthur Frederick Palfrey, was born on the 12th January, 1913, held an East African Pilot's Licence No. 463 (T.71) issued on the 26th October, 1954, and kept valid until the present period of validity which expires on the 30th March, 1971. The licence is valid for Group 'A' landplanes "All single engined aeroplanes under 12,500 lbs M.T.W.A.". He also held an East African Radio Telephony Operator's Licence Number 1072 (T.91) issued on the 26th May, 1967 and kept in line with the Private Pilot's Licence described above. On application for renewal of his Private Pilot's Licence on the 28th March, 1970, Mr. Palfrey claimed a total experience of 300 hours as pilot in command during the 12 months preceeding the date of application.

1.6. Aircraft Information

5Y-KTV, a Cessna 206, Serial No. 206-0102, powered by one Continental IO-520-A engine and constructed by the Cessna Aircraft Company, Wichita, Kansas, U.S.A. arrived in East Africa in possession of a Certificate of Airworthiness issued by the F.A.A. Washington, D.C., No. E.54331. An East African Certificate of Airworthiness No. 315 was issued on the 19th March, 1965, and has since been kept current until the last validity period of 17th May, 1969 to 22nd June, 1970 Category Transport (Pax).

On the 20th March, 1964 the aircraft was registered in the name of Safari Air Services Ltd., P.O. Box 1951, Nairobi and Credit Finance Corporation, P.O. Box 12833, Nairobi. On the 23rd April, 1965, this was transferred to Caspair Ltd., P.O. Box 2283, Nairobi and Credit Finance Corporation, P.O. Box 12833, Nairobi. On the 17th March, 1965 this became Safari Air Services Ltd., P.O. Box 1951, Nairobi, Caspair Ltd., P.O. Box 2283, Nairobi and Credit Finance Corporation, P.O. Box 12833, Nairobi. On the 22nd July, 1965 it passed to Avon Air Ltd., P.O. Box 133, Malindi. On the 16th September, 1968, it became the property of Wilkenair (Malindi) Ltd., P.O. Box 133, Malindi.

The Airframe, Engine and Propeller Log Books had not been kept up to date, and the last entries were made on the 8th May, 1970. At that time the total A/F hours flown were 3,793 hours and hours flown since the Certificate of Airworthiness Overhaul, 423. The engine had run 1,366 hours since new and 343 hours since complete overhaul. The propeller had run 3,588 hours since new, and 528 since complete overhaul.

The Certificate of Airworthiness was due to expire at midnight on the day of the accident, and there is reason to believe that the Pilot was intending to fly on to Nairobi from Manyara for the purpose of having the aircraft overhauled in order to have the Certificate of Airworthiness renewed.

1.7. Meteorological Information

No weather report was available for the accident site. At Arusha, some 7 miles S.E. of the site the weather was reported as 7/8 cloud at 200 feet with rain. Inexpert eye witnesses at the site indicated that there was mist and drizzle over the hilltops on each side of the valley.

1.8. Aids to Navigation

None available.

1.9. Communications

The aircraft was fitted with VHF RT equipment.

1.10. Aerodrome and Ground Facilities

None available.

1.11. Flight Recorders

No recorder was fitted, nor was one required to be fitted.

1.12. The Wreckage

Initial impact was made by the aircraft hitting rising ground whilst in a climbing attitude, the first components to strike being the nose wheel and the pannier beneath the fuselage.

The wreckage trail extended for some sixty yards up the hill, starting with parts of the broken pannier, fairings, foot-step, parts of the air intake etc. The Port rear door and pieces of perspex, together with pieces of exhaust pipe and engine cowlings were scattered 30 yards further on before the aircraft turned over on its back.

The engine and propeller became detached and rolled some ten yards down the hill. Fire immediately broke out.

1.13. Fire

The fire was so intense that it virtually destroyed the entire aircraft with the exception of the empennage unit and the leading edges of the main planes.

1.14. Survival Aspects

This accident, in view of the intense fire, was not survivable.

1.15. Tests and Research

None.

1.16. Medical Aspects

None.

2. ANALYSIS AND CONCLUSIONS

2.1. Analysis

The normal route from Ngare Nairobi to Arusha would require a westerly heading from Ngare, Nairobi on a track north of Mt. Meru and, then a southerly heading through the "saddle" or gap between Mt. Meru and the Monduli Range, to Arusha.

If the saddle was covered in cloud, down to the ground, an alternative route would be to continue west over lower ground after passing abeam Mt. Meru to a point at the western end of the Monduli Range where conditions might have been such that the aircraft could have headed south, picked up the Arusha/Manyara Road and followed this, in an easterly direction, to Arusha. Along either route the aircraft could have reached the position where the accident occurred, if the pilot, because of the low cloud and poor visibility, could not maintain a direct track to Arusha.

It is probable that the pilot continued the flight into reducing conditions of cloud base and visibility to the extent that he became disorientated and, in an attempt to extricate himself flew into rising ground in cloud. The track which the aircraft was following at the time of the crash would have almost inevitably resulted in the aircraft striking the ground as, straight ahead and within approximately four miles, the ground contours rise to over 8000 feet a.m.s.l.

During the investigation into the circumstances of the accident it was found that, on the day before the accident the aircraft had been refuelled with approximately twelve gallons of Esso Extra motor spirit. It is not known how much aviation fuel was in the aircraft before the motor fuel was put in, however, the pilot was heard to say that he had enough to get to Arusha next day but required the twelve gallons as insurance. It is possible, therefore, that the aircraft fuel tanks contained a 50/50 mixture of aviation and motor fuel. This factor cannot be ignored and, although there was no evidence that premature engine failure caused the accident, it is possible that the engine might not have developed full power under full power climbing conditions.

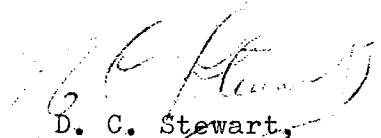
2.2. Conclusions

(a) Findings

- (i) The documentation of the aircraft was in order.
- (ii) The aircraft had been properly maintained.
- (iii) There was no pre-crash failure of the aircraft.
- (iv) The weight of the aircraft and centre of gravity were within the prescribed limits, and there was ample fuel for the flight.
- (v) The pilot in charge was properly licensed.
- (vi) The aircraft flew into rising ground which was obscured by low cloud cover.

(b) Cause

The accident resulted from the aircraft flying into rising ground in weather conditions that were beyond the capabilities of the pilot in charge.


D. C. Stewart,
CHIEF INSPECTOR OF ACCIDENTS