



FEDERAL REPUBLIC OF NIGERIA

FEDERAL MINISTRY OF TRANSPORT AND AVIATION

**Report on the Accident
to
Piper Cherokee PA-28-140 Aircraft
at
Kumapayi Village Near Ibadan
on the 19th August 1984**

Federal Ministry of Transport and Aviation
Air Registration Branch
P. M. B. 21029
Ikeja

Telegram "AIRSAFETY" Lagos

Telephone 963018

25 October, 1984

Ref. No. CIA 110

The Hon. Minister of Transport & Aviation,
Federal Ministry of Transport & Aviation,
Joseph Street,
Lagos.

Dear Sir,

Civil Aircraft Accident Report No. CIA. 110

I have the honour to submit the report on the circumstances leading to the accident of the Piper Cherokee PA-28-140 aircraft registered 5N-AEO at Kumapayi village near Ibadan on the 19th of August, 1984.

Yours faithfully,

(K. K. O. SAGOE)
Chief Inspector of Accidents

AIRCRAFT ACCIDENT INVESTIGATION

CIVIL ACCIDENT REPORT NO. CIA 110

Aircraft: Piper PA-28-140 Cherokee 5N-AEO.
Engine: Lycoming O-320-E2A.
Owner: John G. H. Craig,
International Institute of Tropical Agriculture,
P.M.B. 5320,
IBADAN.
Pilot: John G. H. Craig (Minor Injuries)
Passengers: (1) Mr. Trevor Howard, 43 years — *Seriously Injured.*
(2) Master Andrew Couper, 13 years — *Minor Injuries.*
Place of Accident: Kumapayi Village about 15km north of new airport
at Ibadan.
Date and Time: 19th August 1984 at 2.25 p.m. local time
(13:25 GMT).
All times in this report are local time.

Summary:

The aircraft was on a private pleasure flight on a round-trip from Ibadan to Oshogbo and back to Ibadan via Ilorin.

The aircraft was airborne at 14:04 hrs from runway 23, climbing out for the initial altitude of 3000ft. As the pilot trimmed the fuel mixture for 75% of the maximum engine revolutions per minute, i.e. 2400 r.p.m., he heard an unusual sound from the engines. On checking the engine instruments he discovered that the engine oil pressure was indicating zero.

He noticed a burning smell in the cabin and his response was to throttle back to 2000 r.p.m. The oil temperature gauge was in the 'red' and the burning smell was further increasing.

The aircraft was then rapidly losing height and it became clear that the aircraft could not sustain its altitude for arrival at the airport.

In an attempt to make a safe eastern approach into the football field of a village school at Kumapayi, the starboard main landing gear caught a palm-tree. Subsequently the bottom side of the main fuselage made a major impact with other trees in the cluster and the aircraft crashed to the ground in an inverted position.

The report concludes that the failure of one of the oil pressure hoses between the oil pump and the oil cooler was the primary cause of the accident.

1. FACTUAL INFORMATION

1.1 History of the flight: The aircraft, which was based at the new Ibadan airport was airborne at 14:04 hours local time from Ibadan to Oshogbo via Ilorin.

The runway of departure was runway 23, with an initial clearance by the Air Traffic Control to an altitude of 3000ft. The total flight endurance of the aircraft was between 5 and 6 hours.

As the pilot trimmed the aircraft fuel mixture for a 75% cruise power of 2,400 revolutions per minute, he heard an unusual change in the sound of the engine. On glancing around the engine instruments he observed that the oil pressure gauge was indicating zero.

He immediately turned back for the airfield. A few minutes enroute back to the field he felt that the engine was beginning to smell of being overheated and he responded by throttling back to 2000 r.p.m. to lower the top cylinder temperature.

Ibadan control tower was alerted about the engine problem at 14:16 hours local time and a straight-in approach to runway 23 was requested.

The Pilot reported the field in sight before the controller lost radio contact with the aircraft at 14:22 hours.

As the aircraft was then rapidly losing height, an emergency landing was planned on a suitable location.

The Iwo Road was not suitable due to the volume of traffic plying the road and a football field of a village school was then selected. The easier approach into the field was from the West, but the Pilot decided against the approach because the school building and possibly, people were located at the far eastern end of the field. The aircraft was then flown and positioned for an approach from east of the field.

The aircraft was continuously losing height throughout the manoeuvre with the result that the starboard main landing gear made a major impact with a palm-tree located about 150 meters from the field. The main fuselage soon crashed into the trees in the cluster. The aircraft crashed to the ground in an inverted position. The location of the crash-site was at Kumapayi Village, latitude 7°30'N and longitude 4°00'E, at 14:25 hours local time at day-time.

1.2 Injuries to Persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Others</i>
Fatal	—	—	—
Serious	—	1	—
Minor	1	1	—

1.3 Damage to aircraft:

The aircraft was totally destroyed.

1.4 Other Damage:

Destruction to some cash-crops consisting of cassava plants and yam tubers.

1.5 Crew Information:

Mr. John G.H. Craig, aged 58, was the owner and operator of the aircraft. He held a Private Pilot's Licence number 1961 in Group A which was valid from the 28th of May 1984 to the 18th of April, 1985. He was medically examined and assessed as fit to act in the capacity of a Pilot on the 9th April, 1984. The limitation on his licence specifies that the holder wears spectacles which correct for near vision whilst exercising the privileges of the licence.

His total flying at the time of the accident was 286 hrs. 46 minutes of which 150 hrs. were flown on the PA-28-140 Cherokee. His personal flying log book entries indicate that he flew for one hour on the 1st April 1984 and 50 minutes on the 17th August 1984. The flight which terminated in this accident was 21 minutes in duration on the 19th of August 1984.

1.6 Aircraft Information:

The PA-28-140, Piper Cherokee which was manufactured in 1972 with the serial number 28-7225364 obtained its first Certificate of Airworthiness in Nigeria on the 22nd of December, 1972. Its current Certificate of Airworthiness was renewed on the 15th of August, 1984. The registered owner on its Certificate of Registration No. 307 issued on the 16th of April, 1982, is Mr. John G.H. Craig. The aircraft was originally owned and operated by the Lagos Flying Club.

The 500 hours maintenance check carried out prior to the renewal of its current Certificate of Airworthiness was carried out by Mr. Muri Olabooye on the authority of his licence No. 380.

Mr. John Craig was authorized to carry out and endorse all checks up to the 50 hrs inspection by the ARB in a letter Ref. CAD.221/9/82/10 of the 24th September, 1982.

The weight and centre of gravity of the aircraft were within the prescribed limits during the phase of operation related to the accident.

The type of fuel used was Avgas.

The total flying hours of the aircraft at the time of crash was 3,164 hours and the single Lycoming O-320-E2A engine recorded 1,254 hrs since overhaul.

1.7 Meteorological Information:

The meteorological conditions prevailing at the airport which was located 15 km south of the crash site were as follows:-

Time	— 1400 hours local.
Surface wind	— 240°/08 knots.
Horizontal Visibility	— 20 km
Present weather	— Nil.
Height of cloud above ground	— 6 oktas Cu. at 390 m.
Temperature	— 29°C, Dew point 22°C.
Q.N.H.	— 1012 mb.

The natural light condition at the time of accident was sunlight.

1.8 Aids to Navigation:

VOR/DME	— Serviceable.
ILS	— Serviceable. (Runway 23 Direction)
NDB	— Serviceable.

1.9 Communication:

V.H.F. Tower Frequencies — 118.2, 122.6 and 123.1 MHZ
S.S.B — 9495 (voice) and 8,74 MHZ (telegraphy) were both unserviceable.
There were no telephone links between the airport and the Ibadan township.

1.10 Aerodrome Information:

Not Applicable to the accident.

1.11 Flight Recorders:

Not installed or required by law for the aircraft type.

1.12 Wreckage and Impact Information:



1.13 Medical and Pathological Information:

The Pilot in Command was in a fit state to fly the aircraft.

1.14 Fire:

There was no outbreak of fire.

1.15 Survival Aspects:

The aircraft lost radio contact with the control tower at 14:22 hrs local time, but the search and rescue party could not locate the accident site until 16:50 hrs. local time.

The passenger on the right front seat of the aircraft sustained serious injuries to an eye socket.

The Pilot and the passenger on the rear seat sustained minor bruises and muscle strains.

1.16 Test and Research:

The oil pump, fuel pump and all accessories of the aircraft engine were found in a serviceable condition.

Visual inspection revealed serious cracks and deterioration of all flexible rubber hoses on the engine.

1.17 Additional Information:

NIL

1.18 New Investigation techniques:

NIL

2. ANALYSIS:

The fact that all flexible hoses both in the oil and fuel systems were found in a deteriorated condition is of much concern to the investigators bearing in mind the fact that the aircraft was checked out of a 500 hour inspection four days before the crash.

The Certificate of Airworthiness of the aircraft was renewed four days previous to the air crash.

It is evident that two opportunities existed for the detection of the degraded conditions of the flexible rubber hoses prior to the crash.

The Avco Lycoming service instruction for the engine and parts recommends that all engine oil hoses, oil seals and fuel hoses must be replaced regardless of their apparent condition at the time of overhaul.

The service instruction clearly does not limit such replacements only to the time of overhaul of the engine.

The primary cause of the accident is attributable to the in-service failure of one of the shielded oil hoses between the oil pump and the oil cooler. These hoses were found in such a deteriorated condition that the outer surface of the hoses revealed evidence of pressurized engine oil having expanded the outer fibre on previous flights before the accident. The wire braiding of these hoses were also found corroded. The complete failure of the hose with Part No. 63901-72 during the flight resulted in the total loss of engine oil which was indicated as Zero in the oil pressure gauge.

The secondary cause of the accident could be inferred from the pilot's handling of the aircraft from the moment he recognized the emergency. The Pilot and owner of the aircraft was primarily occupied with saving the engine from seizure due to overheat. Reducing the engine R.M.P. to 2000 r.p.m. and accepting the continuous height loss showed that he did not fully recognize the extent of the emergency. A straight in approach into the football field from the West should have been the next option because an impact with a school building in event of an overrun would have been at a low speed. The emergency situation in effect did not call for an ideal landing as one would do in a practice rough-field landing. The Pilot's handling and alertness in emergency were not at their highest probably because he had flown for less than 3 hours in the last 8 months previous to the accident.

3. **CONCLUSIONS:**

- (a) **Findings:** The aircraft was properly loaded and its documentation was in order.
2. The aircraft had been maintained in accordance with an approved maintenance schedule.
 3. The inspection and issuance of the certificate of maintenance for the last check was carried out by an unauthorized maintenance personnel in that the PA-28-140 cherokee was not endorsed on his licence No. 380 even though he was qualified to inspect a higher classed, twin engined PA-23-250- aircraft.
 4. The accident was not weather related.
 5. The failure of an oil hose Part No. 63901-72 connecting the oil pump to the oil cooler was the primary cause of the accident.
 6. The Pilot's handling of the aircraft in an emergency situation was a contributory factor to the accident.
 7. The search and rescue operations were far below standard in that the arrival at the accident site which was located 15 km. from the airport was 2 hours 25 minutes.
 8. There was no telephone link from the airport to the local police posts in the town and the hospitals.

(b) **Probable Cause:**

The probable cause of this accident is the in-flight complete failure to the wire braided oil rubber hose Part No.63901-72.

4. **Safety Recommendations:**

1. Holders of Private Pilots' Licences must be subject to a checkride with a qualified instructor on such occasions that the privileges of the Licences are not exercised for a period of 90 days prior to an intending flight.
2. All airports must be equipped with telephone lines for normal and emergency communications with all other bodies which constitute the search and rescue party in event of accidents.
3. All flexible hoses must be limited to an in-service life of 24 Calendar months after which they must be replaced irrespective of their apparent condition.