

**EAST AFRICAN COMMUNITY  
DIRECTORATE OF CIVIL AVIATION**

**CIVIL ACCIDENT NO. CAV/ACC/21/76**

**REPORT ON THE ACCIDENT TO PIPER PA32-160 WHICH  
OCCURRED ON 8<sup>TH</sup> AUGUST, 1976 MUSA HILLS, MONDULI, ARUSHA  
TANZANIA**

**ACCIDENT INVESTIGATION BRANCH**  
**AIRCRAFT ACCIDENT REPORT NO. CAV/ACC/21/76**

Aircraft type & Registration : PIPER PA32-160, 5H-TBV

Engines : Lycoming 0-320-B3B

Registered Owner : Tanzania Government, P.O. 1493 Dar es Salaam  
P.O. Box 1636, Arusha, Tanzania

Operator : Tanzania Government

Crew : Pilot E.E. Oronu - Killed

Passengers : 2 - Killed

Place of Accident : Mussa Hills, Arusha, Tanzania.

Date and Time : 8<sup>th</sup> August, 1976, Approximately 0730 hours

**ALL TIMES IN THIS REPORT ARE UTC**

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**SUMMARY**

The aircraft was on a flight from Dar es Salaam to Arusha. It is not known whether on a Government flight or private flight. It departed Dar es Salaam 0517 with an endurance of 0500 hours and two people reported on board. At approximately 0728 the aircraft was heard overhead Arusha. It was again heard circling overhead Monduli Area opening and closing power. A loud bang was heard but due to low cloud nothing was visible. After this bang nothing more was heard of the aircraft.

**1. INVESTIGATION**

Subsequent investigation revealed that the aircraft struck the ground and disintegrated whilst flying in cloud conditions.

**1.1 HISTORY OF THE FLIGHT**

The aircraft took off from Dar es Salaam at 0517 hours and arrived overhead Arusha at 0720 hours when the weather was poor and nearly overcast. It had then circled Monduli area possibly trying to find an opening for descent. A loud bang was heard after which there was silence. It is calculated that the aircraft was flying on a southerly course and descending through cloud when it hit trees. A Tanzania Police Helicopter took off from Arusha on 9<sup>th</sup> August, 1976 at 0359 and spotted the wreckage at 1015 hours.

### 1.1.1 IMPACT

The drone of the aircraft, which was being flown in poor weather in the vicinity of hilly terrain, was heard by some farmers though the aircraft was not visible due to bad weather. It is calculated that the aircraft was flying approximately on a southerly course and possibly descending down the hill slope. The wreckage was found the following day by a police helicopter.

### 1.2 INJURIES TO PERSONS

Although the aircraft had 2 people reported on board upon departure from Dar es Salaam, three bodies were found at the site of crash.

<i>INJURIES</i>	<i>CREW</i>	<i>PASSENGERS</i>	<i>OTHERS</i>
<i>Fatal</i>	1	2	-
<i>Non-fatal</i>	-	-	-
<i>None</i>	-	-	-

### 1.3 DAMAGE TO AIRCRAFT

The aircraft was destroyed.

### 1.4 OTHER DAMAGE

Broken branches of trees.

### 1.5 CREW INFORMATION

Born on June, 1949, Moshi, Tanzania, Mr. Emmanuel Ernest Oronu held an E.A. Commercial Pilot's Licence No. 1573 (T103) issued on 3 March 1975 and valid until 26 February, 1977. This licence was rated for Cessna 150 only in group one. He also held an R/T operator's Licence No. X-71 dated 20 November, 1973 which was kept in line with the CPL described above. In his application form for renewal of his CPL dated 23 February, 1976 he claimed a total of 320 hours 5 minutes made up as follows:-

<i>Pilot in Command by day</i>	:	170 hours 45 minutes
<i>Pilot in Command by night</i>	:	7 hours
<i>Co-Pilot by day</i>	:	135 hours 50 minutes
<i>Co-Pilot by night</i>	:	6 hours 30 minutes

### 1.6 AIRCRAFT INFORMATION

A Piper PA 23-160 Constructor's Serial No. 23-1789 powered by two Lycoming O-320-B3B engines and manufactured by Piper Aircraft Corporation, Lock Haven, PA, U.S.A.

This aircraft arrived in E.A. in possession of an Export C of A No. E44054 issued on 14 October, 1956 in Washington D.C. An E. African C of A No. T.15 valid until 18 January, 1961 was issued on the 19<sup>th</sup> January, 1960. The C of A has since been kept current until the present valid period of 31<sup>st</sup> January, 1976 to 30<sup>th</sup> January, 1977.

At the time of the accident, the aircraft had flown a total of approximately 6692 hours and 505 hours since the last Check III Inspection, when the C of A was renewed. The Engine S/N L-2070-39 had ran approximately 3994 hours since new and 1122 since the last complete overhaul. The engine S/N L-2638-39 had run approximately 4040 hours and 1016 hours since the last complete overhaul.

#### ***REGISTRATION/OWNERSHIP***

When this aircraft arrived in East Africa on 14 October, 1959, it was registered in the name of the Ministry of Communications and Transport (Aviation Division) P.O. Box 1493 Dar es Salaam.

#### ***1.7 METEOROLOGICAL INFORMATION***

Weather reported by Arusha Meteorological Department for 0600 was:-

Surface wind	120°	06 knots
Visibility	More than 10 km	
Cloud	7/8 stratocumulus at 1400 ft above ground level	
Temperature	15°C	
Dew point	12°C	
QNA	1021	

At 0700 the cloud had lifted to 7/8 at 1500 ft above ground level. At 0900 the wind had changed to 090° at temperature 17°C.

#### ***1.8 AID TO NAVIGATION***

Arusha Non Direction Beacon AR was serviceable.

#### ***1.9 COMMUNICATIONS***

The aircraft was fitted with a normal two-way communication station and the pilot held a valid R.T. Licence. ACC had passed ETA of the aircraft to Arusha. Since this was on a Sunday, Arusha Tower was unmanned by an ATCO.

#### ***1.10 AERODROME GROUND FACILITIES***

Not applicable.

#### ***1.11 FLIGHT RECORDER***

There were no requirements for this instrument to be fitted.

#### ***1.12 WRECKAGE***

The aircraft had struck trees and one wing and engine were torn off the fuselage. The aeroplane did not catch fire but the remaining engine, wing and fuselage were badly twisted.

### **1.13 MEDICAL AND PATHOLOGICAL INFORMATION**

All occupants were killed on impact and subsequent buckling of the main fuselage. Three bodies were found trapped in the wreckage on 9 August, 1976. On 10<sup>th</sup> August, 1976 the bodies were removed to Government Hospital, Arusha, for examination.

### **1.14 FIRE**

The aeroplane did not catch fire.

### **1.15 SURVIVAL ASPECTS**

This accident was not survivable. The force of impact was sufficiently severe to tear one wing and one engine away from the main fuselage.

### **1.16 TESTS AND RESEARCH**

Nil.

## **2.0 ANALYSIS AND CONCLUSIONS**

### **2.1 ANALYSIS**

It is apparent from witnesses who heard the aircraft that it was circling, possibly looking for an opening to descend below cloud. From the broken branches and the thickness of the forest, it is apparent the pilot flew blindly into the trees. Since Arusha beacon was serviceable and considering that the crash was approximately 15 miles from Arusha airfield, it would appear that the pilot may have lost his position and reckoned he was breaking cloud overhead Arusha.

### **2.1.2 GENERAL CONSIDERATION OPERATIONAL ASPECT**

From Police reports, who visited the wreckage, it is stated that the wreckage was in the bush on the slopes on Musa Hills. Three bodies of African males were found trapped in the aircraft. One of the aircraft wings was separated from the main body and was lying below a tree which had been hit by the aircraft. One engine was also lying near the wing:

### **METEOROLOGICAL CONSIDERATION**

At the time of the impact, which was approximately 0730 hours the weather was overcast at about 1400 feet above sea level. Musa Hills are at an elevation of 8726 ft above sea level. It is apparent that the hills were covered by cloud and the pilot was likely to have been in complete IMC during the impact.

### **OTHER CONSIDERATIONS**

During the investigation the following anomalies and irregularities in compliance with normal maintenance procedures were observed:-

#### **(1) Vertical Speed Indicator:**

VSI Beech Part No. 7040-B4 Serial No. 62993 was fitted at C of A renewal on 27<sup>th</sup> January, 1976. Source of origin, date of overhaul, repair or calibration unknown.

(2) **Artificial Horizon:**

A.H. Serial No. 2909 was fitted to the aircraft on 15<sup>th</sup> March, 1976 in order to clear a previous flight defect. Examination of the serviceable lable removed from this instrument at the time of its installation indicated that the date of its last certification by a Aero Instrument Services Ltd., Nairobi on the 14<sup>th</sup> November, 1972 had been amended in script to read 14<sup>th</sup> November, 1975. Examination of the original approved certificate at Aero Instruments, Nairobi, confirmed the date of certification as the 14<sup>th</sup> November, 1972. From enquiries made with Wilken Aviation Ltd. it was further established that the instrument was dispatched to the Government Flight Tanzania on 17<sup>th</sup> November, 1972.

(3) **Directional Gyro:**

D.G. Serial No. 24239 was fitted at C of A renewal on the 27<sup>th</sup> January, 1976. Source of origin, date of overhaul, repair or calibration unknown. No date available in Government Flight.

Certification of the remaining instrumentation appeared in order.

From interview with Mr. C.M. James, Engineer responsible for the above mentioned certifications under dispensation CAV/3/3/1A, it became evident that equipment repaired for the recommended periodic rotation for gyroscopically operated instruments is not available from the records of the Government Flight, therefore these components would be limited to a maximum shelf life of 9-12 months from the date of their certification.

During this investigation it was also noted from the aircraft log book that a previous directional gyro, fitted on 5<sup>th</sup> January, 1976 had been held in stores since November, 1972 and that this component had to be removed from the aircraft due to unserviceability after only 19 hours operation.

## **CONCLUSIONS**

### **(a) FINDINGS**

- (i) The documentation for the aircraft was not in order in as much that time expired instruments had been installed.
- (ii) The pilot was properly licenced.
- (iii) The pilot did not hold an instrument rating.
- (iv) The number on board was erroneously reported on take off.
- (v) There was evidence that the aircraft struck trees on high ground whilst under power and in cloud.
- (vi) There was no evidence of any pre-crash failure or mechanical defect.

(b) **CAUSE**

The pilot apparently entered conditions of poor or nil visibility from which he was incapable of extracting himself before the aircraft flew into trees in hilly terrain. The fact that some of the navigational instruments may not have been functioning correctly cannot be discounted.

DC Stewart  
CHIEF INSPECTOR OF ACCIDENTS