

CAV/ACC/31/68

ACCIDENT INVESTIGATION BRANCH

CIVIL AIRCRAFT ACCIDENT

Report on the accident to Piper PA. 30
Aircraft Registration Number
5X-UVD which occurred approx.
3½ nautical miles N.W. of
Ngorongoro Lodge,
Tanzania.

EAST AFRICAN COMMUNITY

CAV/ACC/31/68

ACCIDENT REPORT
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Civil Aircraft Accident Report No. CAV/ACC/31/68

AIRCRAFT: Piper PA.30 5X-UVD. ENGINE: Twin Lycoming IO-320-BIA

REGISTERED OWNER: Wilkenair Ltd., P.O. Box 4580, Nairobi.

CREW: Captain Maurice Blumenthal - injured

PASSENGERS: Mr. James Silbert - injured
Mrs. Freda Hartley - uninjured
Dr. Joel Hartley - injured

PLACE OF ACCIDENT: Approximately 3½ nautical miles N.W. of Ngorongoro Lodge.

DATE AND TIME: 20th August, 1968. 0545 approximately.

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

S U M M A R Y

The accident occurred when the aircraft, on a charter flight from Wilson Aerodrome to Ngorongoro Airstrip, was approaching Ngorongoro Crater preparatory to landing on the airstrip in the Crater. The aircraft, whilst approaching the crater, experienced a down draught and descended into cloud and struck the Oloroklukonya ridge. The crew and passengers were injured.

1. INVESTIGATION

1.1 History of the Flight

The aircraft departed Wilson Aerodrome at 0440 on the day of the accident on an IFR Flight plan to Ngorongoro Crater. The IFR Plan was cancelled at 0512 and the aircraft proceeded under VFR to the Ngorongoro area. After passing the southern end of Lake Natron and with the mountain Ol Donio Lengai in sight the aircraft turned onto a heading of 245° N to fly parallel to the mountain range on the port side.

2/10/00

10/10/00

2/10/00

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At 0527 the rim of the Crater was sighted. The aircraft continued to fly on an approximate southerly heading to a gap on the North Western rim of the Crater. At this time the aircraft was at FL 80 above 3-4/8 cumulus cloud. The north-western gap was not clear and the pilot turned right and descended towards Olduvai Gorge to 7300 feet on an altimeter setting of 29.92. From the Gorge the pilot set course on 155°N towards the Crater keeping the Olduvai Gorge-Ngorongoro Road on his port side. Weather conditions were clear but ahead there was 2/8 of Cumulus below the aircraft and 2/8 cumulus above the aircraft.

Approaching the Crater and at approximately 3-4 miles from the point of impact the aircraft began to descend at 5-600 feet per minute. Full power was applied and the airspeed was reduced to 100 m.p.h. I.A.S. The aircraft continued to descend at 1-300 f.p.m. and, with the stall warning light flashing and with the speed fluctuating between 80 and 100 m.p.h. IAS, it descended into cloud. About 10-12 seconds later in a visibility of 100 metres or less the pilot saw a hill ahead and, as it was obvious that he could not avoid striking the ground, he turned hard left and pulled the control column back at approximately 0545. The starboard wing tip struck a tree and the aircraft turned through 180° and impacted on a 1 in 1 slope with wings and fuselage parallel to the slope, some 500 feet below top of a ridge. It is estimated that the aircraft struck the tree at a speed of between 60 and 65 m.p.h.

Crew and passengers vacated the aircraft immediately. There was no fire and emergency and water packs were removed from the aircraft. Dr. Hartley used his personal kit to treat the cuts which the pilot and one of the passengers had sustained.

The crew and passengers were not able immediately to establish their position due to poor visibility. At 1015, visibility improved and they were able to proceed down the hill on which the accident took place and stopped a U.T.C. Landrover on a road which took them to Ngorongoro Lodge.

1.2 Injuries to Persons.

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

1.3 Damage to Aircraft

The damage to the aircraft was severe. Both wing tips had been broken away and Port and Starboard mainplanes severely damaged. In addition the forward underside of the fuselage was badly damaged together with the nose of the aircraft. Both propellers were bent and the engine nacelles heavily damaged.

In view of the general severeness of the damage a detailed damage report is not considered necessary.

1.4 Other Damage

Nil.

1.5 Crew Information

Captain Maurice Blumenthal aged 36 holds a valid East African Commercial Pilot's Licence which includes a rating for the subject aircraft and a valid instrument rating. He also holds a valid Flight Radiotelephony Operator's Licence.

His total flying experience as a pilot at the time of the accident was 2505.25 hours including 224.30 hours on the PA.30.

Captain Blumenthal received facial injuries in the accident.

1.6 Aircraft Information

5X-UVD was built by the Piper Aircraft Corporation, Lockhaven, U.S.A. in 1965, and was registered in the name of Wilken Air Services Ltd., Nairobi on the 3rd June, 1966 as 5Y-ACB. On the 3rd August, 1967 it was re-registered in the name of Wilken Aviation, Nairobi as 5X-UVD. On the 27th September, 1967 it was re-registered in the name of Wilkenair Ltd. - still as 5X-UVD.

At the time of the accident the airframe has completed 1768 hours flying; the port engine 592 hours since complete overhaul and the starboard engine 558 hours since complete overhaul.

The aircraft has a valid certificate of airworthiness in the Transport Category (Passengers) and it has been maintained to an approved schedule. The Certificate of Maintenance was valid. The weight of the aircraft and the centre of gravity position were within limits at the time of the accident.

1.7 Meteorological Information

No independent weather observation is available for the area in which the accident occurred. However, experience dictates the possibility that the western rim of the Crater and the east/west ridge which the aircraft struck were partially or, more probably, wholly covered in cloud. The meteorological pattern for the day would indicate a strong southerly wind over the area of between 10-20 Knots. The pilot reported that visibility away from cloud was 10-12 N.Ms.

The Director of Meteorology, Kenya, Dr. D. Morth is of the opinion that it is highly probable that, at a position some 3-4 miles down wind of the ridge which the aircraft struck, descending vertical air currents of up to 2000 feet per minute could be experienced caused by the prevailing wind blowing across the Oloroklukonya ridge.

1.8 Aids to Navigation

Nil in the area.

1.9 Communications

The pilot attempted to contact Eastair Centre on 118.9 cm/s when approaching Ngorongoro but without result. After the crash he tried the radios in the aircraft but they had apparently been damaged by the accident.

1.10 Aerodrome and Ground Facilities.

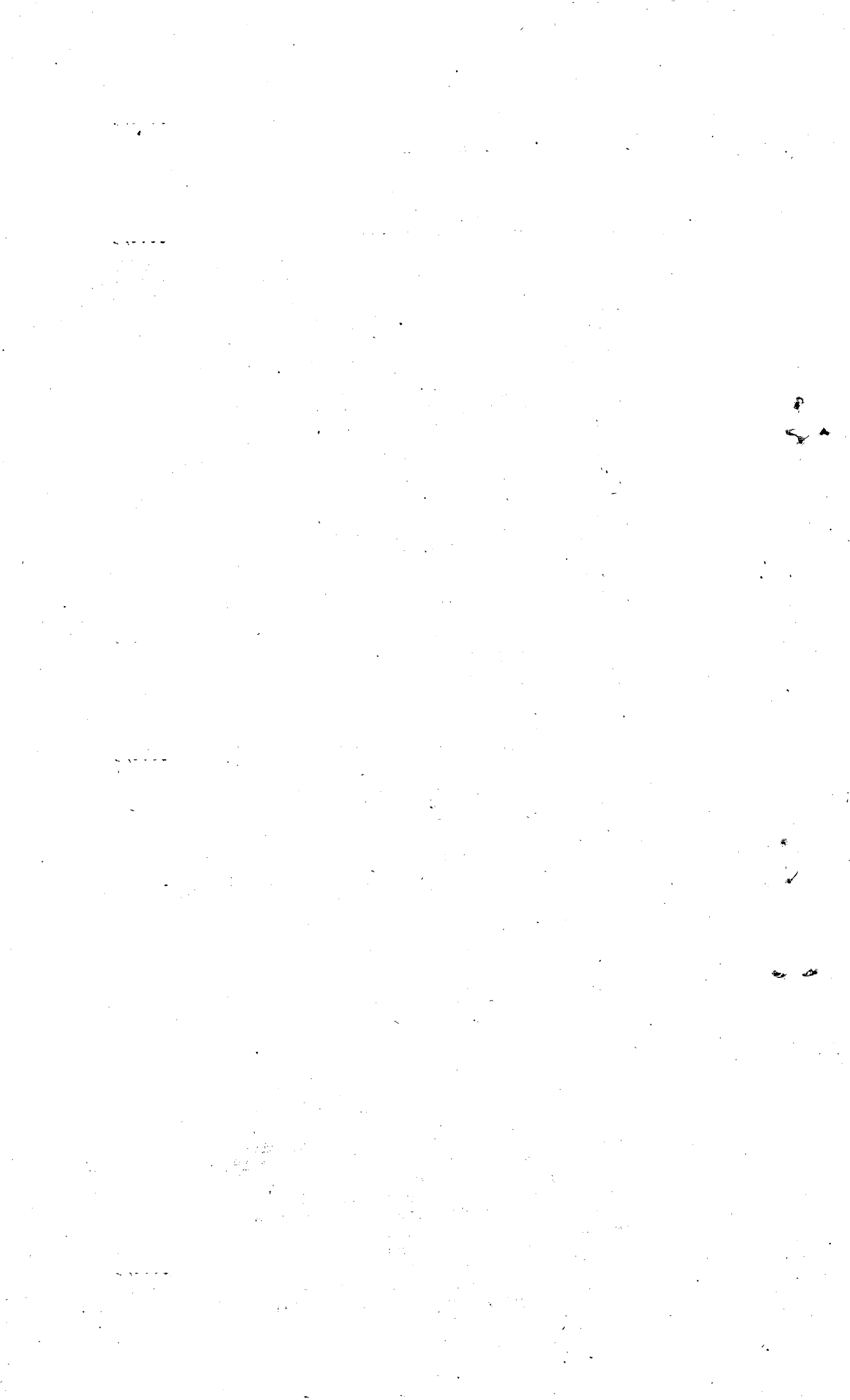
Ngorongoro Crater airstrip is situated on the floor of the Crater some 1500 to 2000 feet lower than the surrounding rim. Cloud on the rim in early morning at the time of year in which the accident happened can make it difficult and sometime impossible to make a safe descent into the Crater.

1.11 Flight Recorders.

Not fitted.

1.12 Wreckage

The wreckage lay in a nose-down attitude on a slope of approximately one in one, facing the opposite way to which the aircraft had been travelling. The starboard wing tip had become detached by striking a tree and the port wing tip was badly damaged by striking the ground. The aircraft had struck the ground on its under side having cartwheeled approximately 180° and made impact with the ground whilst going backwards. Due to the acute angle at which it was lying it was not possible to inspect the underside of the aircraft but sufficient damage was obvious in respect of the mainplanes and front fuselage to preclude any idea of repairing. The major items, such as engine, instrumentation etc., have been salvaged.



1.13 Fire

Fire did not occur.

1.14 Servival Aspects

The passengers and crew were strapped in. Blood on the instrument panel and flying controls and injuries received indicate that the pilot and the passenger in the **front** seat were thrown forward from the waist and suffered facial injuries.

The action by the pilot in assuming a nose up attitude and reducing speed before impact must have reduced the force of impact considerably. At the same time the progressive deceleration produced by the starboard wing striking a tree and the subsequent rotation of the aircraft would also contribute to the comparative mildness of the impact forces.

1.15 Tests and Research

The pilot did not experience any malfunction of the airframe or engines prior to the accident.

A flight over the area was carried out on the 10th September in clear weather conditions to reconstruct the aircraft flight path. It was ascertained that, on a heading of approximately 150°N from Olduvai Gorge and to the south of the Olduvai/Ngorongoro Road, the aircraft would have made good a track almost directly towards the Oloroklukonya ridge. No stable down draught was experienced in the lee of the ridge during the flight but this was not expected in the weather conditions prevailing at the time.

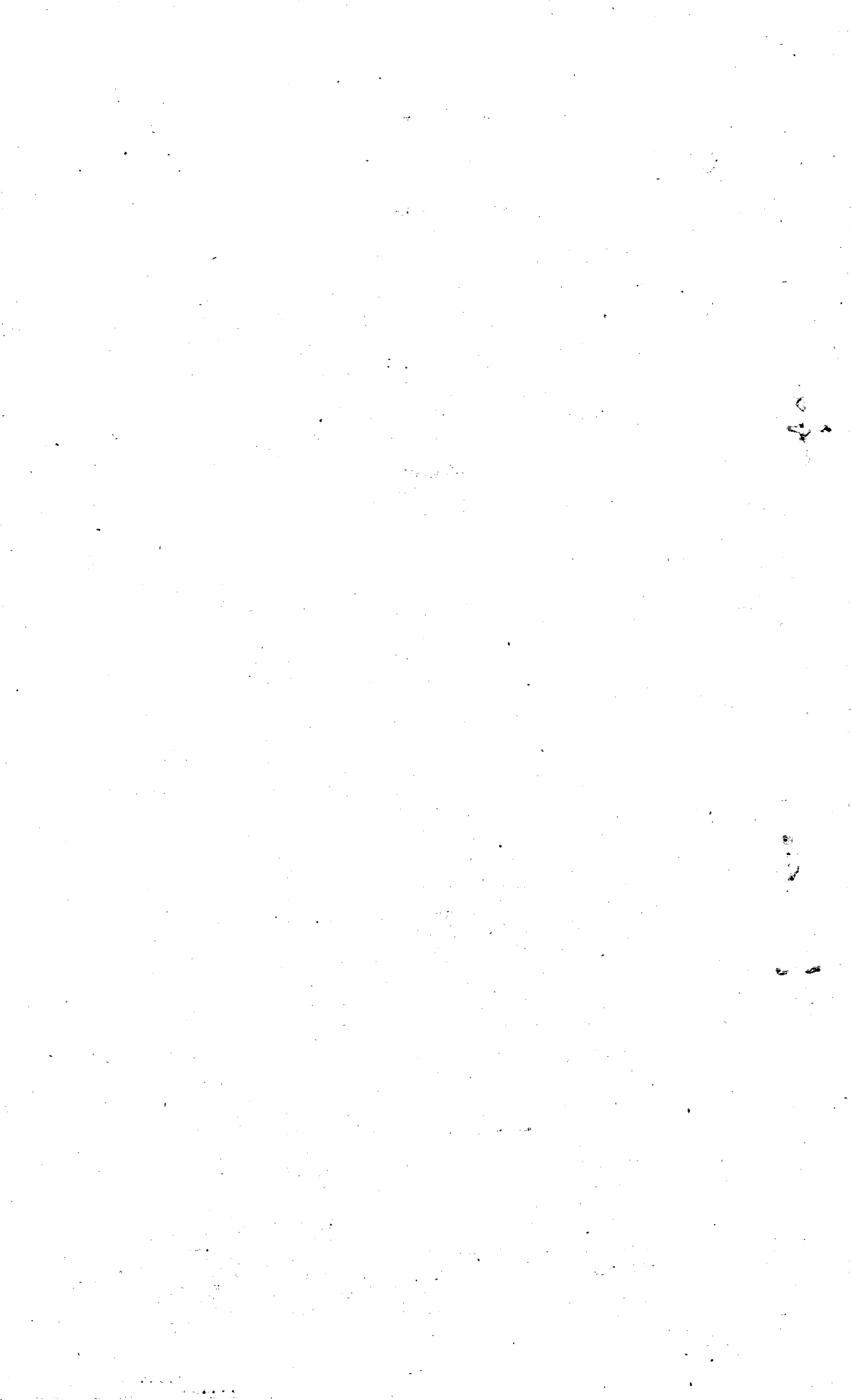
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ANALYSIS AND CONCLUSIONS

Within a radius at least 10 n.m. of the accident site a considerable part of the ground would be obscured by low lying cloud and it is almost certain that the Crater western rim and the Oloroklukonya Ridge were obscured by cloud on the ground or with a very low ceiling above ground level. The pilot stated that the top of Mt. Lamagrut (10276 ft.) was clear above cloud.

During his approach to the Crater on 150°N it is likely that the pilot, thinking that the edge of the low cloud ahead of him indicated the rim of the Crater went further south and therefore nearer to the ridge than he had intended. . . The subsequent descent caused by the mountain wave effect would then have carried the aircraft down and into the ridge which was almost at right angles across its heading.

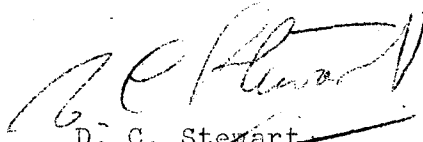
The pilot states that he made his approach to the Crater at 7300 feet on an altimeter setting of 29.92 MBS. The aircraft impacted at a height of approximately 8000 ft. a.m.s.l. and it would appear that, at some state, during the approach a mountain wave up current was experienced unnoticed by the pilot followed by severe down draught.



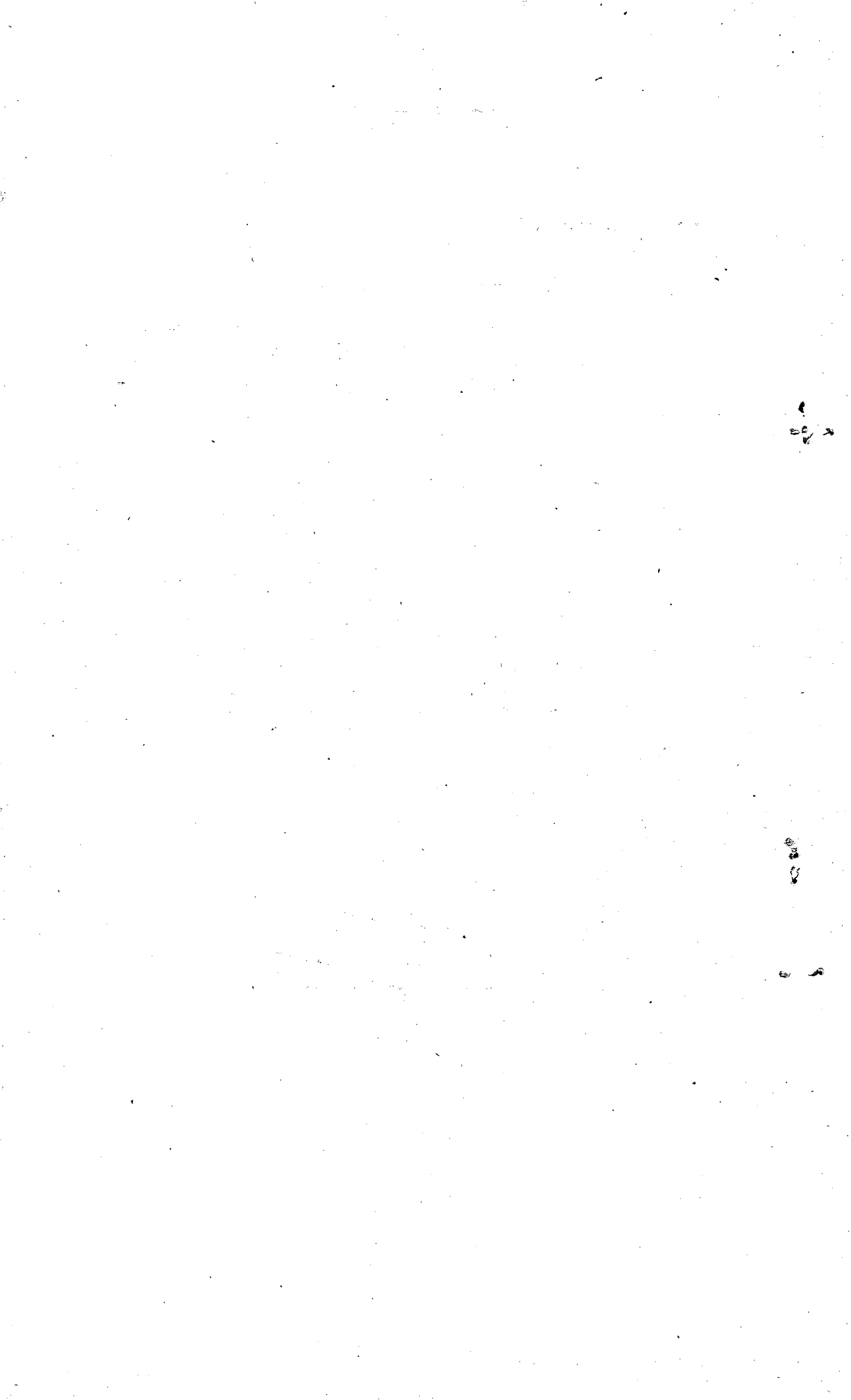
2.2. Conclusion

(a) Findings

- (i) The aircraft was airworthy, properly maintained and correctly loaded.
 - (ii) The pilot was properly licensed.
 - (iii) No evidence of pre-crash failure was indicated or discovered.
 - (iv) Because of cloud cover on ground up to 8727 ft. a.m.s.l. (the height of Olóroklukonya at its highest point) and on the Crater rim the pilot made his approach to the Crater on a track more to the South than intended. This track took the aircraft into an area of a severe down current which caused it to sink into cloud which covered the Olóroklukonya ridge.
- (b) The aircraft crashed into high ground, in cloud, following an uncontrollable descent in a mountain wave down curret.



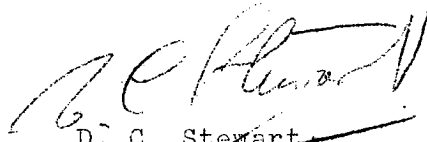
D. C. Stewart
CHIEF INSPECTOR OF ACCIDENTS



2.2. Conclusion

(a) Findings

- (i) The aircraft was airworthy, properly maintained and correctly loaded.
 - (ii) The pilot was properly licensed.
 - (iii) No evidence of pre-crash failure was indicated or discovered.
 - (iv) Because of cloud cover on ground up to 8727 ft. a.m.s.l. (the height of Oloroklukonya at its highest point) and on the Crater rim the pilot made his approach to the Crater on a track more to the South than intended. This track took the aircraft into an area of a severe down current which caused it to sink into cloud which covered the Oloroklukonya ridge.
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QAV/ACC/41/68

ACCIDENT INVESTIGATION BRANCH

CIVIL AIRCRAFT ACCIDENT

Report on the accident to Aero Commander
560E/870 Aircraft Registration Number
5H-TBY which occurred on the 21st
November, 1968 at Mwamapuli
Airstrip near Tabora,
Tanzania.

EAST AFRICAN COMMUNITY

ACCIDENT INVESTIGATION BRANCH

Civil Aircraft Accident Report No. CAV/ACC/41/68

AIRCRAFT: Aero Commander 560E/870 5H-TBY. ENGINE: Lycoming
GO-480-GIB6

REGISTERED OWNER
AND OPERATOR: Tanzania Government Survey Division,
P.O. Box 1493, Dar es Salaam, Tanzania.

PILOT: A. W. Moses - uninjured

PASSENGERS: 1 male, 1 female - uninjured

PLACE OF ACCIDENT: Mwamapuli Airstrip, position 0425S 3353E

DATE AND TIME: 21st November, 1968 approximately 1445 hours

ALL TIMES IN THIS REPORT ARE GMT

S U M M A R Y

Whilst carrying out an aerial inspection of a newly constructed airstrip, the pilot attempted a touch and go landing. After touchdown insufficient runway length remained in which to overshoot and the aircraft crashed into a gravel pit at the end of the runway.

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

1.1. History of the flight

The aircraft arrived at Tabora Aerodrome on 20th November from Dar es Salaam via Dodoma carrying Tanzania Government officials, and was required to convey the same officials on the return journey on 22nd November, 1968.

On the afternoon of 21st November, 1968 the pilot visited Tabora Aerodrome to check over the aircraft for the departure next day and in casual conversation with two persons at the aerodrome, whose names and official designations he did not know, learnt that a new airstrip had been constructed at a site some miles north east of Tabora.

He decided to fly over the site in case he was ever required to land there officially, and taking his two casual acquaintances with him as passengers, he departed Tabora at 1340 hours having informed the Air Traffic Control Officer at Tabora Aerodrome that he was proceeding on local flying.

No flight plan was filed, or intention to land other than back at Tabora, indicated. The pilot was informed that as it was after the hour of official closure of the ATC services no control officer would be available for his return.

On arrival over the site of the new airstrip shortly after 1415 hours, the pilot orbited the area to observe and try and estimate length of runway, surface condition and approach path obstructions. No windsleeve was available but, having observed the smoke drift direction of a nearby bush fire, the pilot decided to attempt an approach with the intention of touching his wheels on the runway and going around again without stopping.

Touchdown was made approximately halfway along the 1600 feet runway, with full flap extended and engine throttles closed. The pilot reports that as he touched, the sun, which was low on the horizon, came out from behind some clouds seriously impairing his forward vision, but in his dazzled condition he saw some mounds on the runway ahead. Realising that he had insufficient runway length remaining in which to overshoot or stop, he feathered both propellers to minimize damage and the aircraft ran into the gravel pit at the Western end of the runway and was substantially damaged.

1.2 Injuries to persons

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

1.3 Damage to aircraft

Substantially damaged.

1.4 Other damage

None

1.5 Crew information

Mr. Arthur William Moses held a United Kingdom Commercial Pilot's Licence No. 60478 and a Radio Telephony Operator's Licence No. 7468 which were converted to East African Commercial Pilot's Licence No. 698(T69) and Radio Licence No. 824(T63) respectively on 25th March 1966 and currently valid until 5th February, 1969. His total flying experience at the time of the accident was some 4575 hours of which 752 hours was in the Aero Commander.

1.6 Airworthiness

The aircraft, an Aero Commander 560E serial number 870 powered by two Lycoming GO-480-GIB6 engines was constructed by the Aero Design and Engineering Corporation, Oklahoma U.S.A., in 1960. It arrived in East Africa in possession of a FAA Certificate of Airworthiness for export No. E-37444. The aircraft was certificated onto the East African Register and the Certificate of Airworthiness has been currently renewed. The last renewal was made on 26th July, 1968 valid until 25th July, 1969. The aircraft had completed 3160.15 hours since new and 169.20 hours since Certificate of Airworthiness renewal. The engines had completed 755.00 hours on the port, and 317.05 hours on the starboard since overhaul. The aircraft was loaded within the weight and centre of gravity limits for the flight.

1.7 Meteorological Information

The weather conditions in the area at the time of the accident as reported by Tabora were fair with an extensive cloud layer of medium cloud and scattered cumulo below. Medium to strong south-easterly winds.

1.8 Aids to navigation

Not applicable.

1.9 Communications

Not applicable.

1.10 Aerodrome and Ground facilities

The aerodrome has been constructed by a Civil Engineering Construction Company for its private use to enable it to employ its own aircraft for rapid communication and the conveyance of perishable foodstuffs.

The runway, which runs approximately due east/west is 1600 feet long by 40 wide, has a few trees and thick bush at the eastern end and a gravel pit on its western extremity. Beyond the gravel pit the ground is very rough for some 25 yards followed by a substantial, steeply-inclined drop into a valley.

No windsleeve is available and there is no manmade means of establishing wind speed or direction.

1.11 Flight Recorders

Not fitted.

1.12 The Wreckage

The aircraft was lying nose down in the gravel pit at the western end of the runway with the port undercarriage oleo leg broken and partially collapsed. The weight of the aircraft was supported by the port wing, the tip of which was embedded in the loose gravel. The aircraft was in one piece but with damage to the mainplane and fuselage amounting virtually to a complete "write-off". No evidence was found to indicate any pre-crash failure of the aircraft or engines. The starboard propeller was in the fully feathered position and undamaged with the port propeller partially feathered with one blade damaged. Both feathering controls were found in the feathering position.

1.13 Fire

There was no fire.

1.14 Survival aspects

The aircraft was brought to a standstill by the action of loose gravel retarding the forward movement of the undercarriage. Although the existence of a manmade gravel pit is extremely undesirable at the end of a runway, it may have been the one factor which prevented a more serious accident in that it may have prevented the aircraft from going over the steep escarpment immediately beyond the pit.

1.15 Tests and Research

Examination of wreckage only.

2 ANALYSIS AND CONCLUSIONS

2.1 Analysis

The pilot, having quite unofficially decided to inspect a new airstrip carried two passengers whose names he did not know in a Government aircraft, and failed to enter details of passengers in the aircraft journey log book.

Having located the new airstrip, the pilot estimated the length of runway by making a timed run along its length at a set airspeed and decided it was of sufficient length on which to carry out a touch and go landing.

The pilot had been given wind speed and direction on departure Tabora, but wrongly assessed the wind speed and direction over the area of the new airstrip. From the evidence of a witness at the airstrip, it is conclusive that a strong easterly wind was affecting the area. The witness was erecting a sheet-iron store at the time of the accident and stated that he was having difficulty in holding the sheet iron in position and was using extra men to accomplish this. Wind speed was estimated from his statement as in excess of 15 knots from the east, based on his statement that the wind at the time of the accident was much stronger than on the day the investigation team visited the site. The wind speed and direction on that day was approximately 120 degrees 12-15 knots.

The aircraft approached from the east over trees and bush with a following wind with full flap lowered and engine power fully back. Touchdown was made half-way along the available length of runway, probably at high speed due to the action of the following wind. The combination of high speed, short runway and the sudden appearance of the sun from behind the clouds was sufficient to cause the pilot to hesitate just long enough to destroy any chance of either accomplishing a successful overshoot or a full stop landing and from this point the accident was inevitable.

The pilot then appears to have reacted quickly in feathering the engines to try and minimise damage but was unable to prevent the aircraft from being extensively damaged.

2.2

Conclusions

(a) Findings

- (i) the aircraft was airworthy and had been properly maintained;
- (ii) the pilot was properly licensed;
- (iii) there was no pre-crash failure of the aircraft;
- (iv) the pilot carried two unknown passengers in a Government aircraft and failed to enter details in the technical log book.

(b) Cause

Whilst attempting to land at a private landing ground, the pilot wrongly assessed length of runway, wind speed and direction, and persisted in trying to land long after it should have been apparent to a pilot of his experience that to do so would endanger the safety of his aircraft and passengers.



R. Allen.
INSPECTOR OF ACCIDENTS