

No. 20

B.I.A.S., DC-4, OO-DEP, accident at Stanleyville Airport, Democratic Republic of the Congo, on 29 November 1964. Report dated 23 December 1964, by the Aeronautics Administration, Ministry of Communications, Democratic Republic of the Congo.

1. - Investigation1.1 History of the flight

The aircraft, was chartered by Air Congo and was carrying out a non-scheduled domestic flight Kamina-Stanleyville-Kamina. Eleven passengers embarked at Stanleyville and the aircraft started its take-off run at 1920 hours local time. After approximately 900 m the pilot suddenly saw, in the darkness, an empty fuel drum on the runway. In an attempt to avoid it, he veered left by braking violently on the left wheels. In spite of this manoeuvre, the nose wheel hit the drum. The forward part of the aircraft was lifted off the ground, aided perhaps by the pilot's manoeuvre in attempting take-off. By that time, the aircraft had attained a speed at which take-off would have been possible under normal conditions. Unfortunately, following the shock the drum bounced, fell back on the runway, bounced again and the aircraft in a nose high attitude caught the drum with the right stabilizer. Part of the stabilizer was torn away and fell on to the runway while the drum was tossed on to the edge of the clearway. The aircraft continued further, now deflected to the right by the unbalanced right stabilizer, which was probably completely distorted. The crew immediately retracted the landing gear. After being airborne about 500 m, the aircraft, out of vertical control, dived into the clearway at an angle of about 30°, bounced up, fell back 50 m farther, skidded on its belly and finally came to a stop after a swing of 90° to the right. During that swing, the passengers in the rear of the cabin were thrown out of the aircraft through the torn-off cargo door and through the open cabin door. Fire broke out immediately after the aircraft came to a stop. The accident occurred on the north clearway of runway 28, about 150 m from the runway end.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	3	3	
Non-fatal		8	
None			

1.3 Damage to aircraft

The aircraft was completely destroyed.

1.4 Other damage

There was no other damage.

1.5 Crew information

The pilot-in-command, aged 37, held an airline transport pilot's licence with ratings for the DC-4 and DC-6 aircraft as well as instrument and night flying ratings. He had flown a total of about 14 000 hours, including 167 hours during the last 90 days. His last medical examination was on 21 May 1964.

The co-pilot, aged 31, also held a valid airline transport pilot's licence with ratings for DC-4 and C-54 type aircraft as well as instrument and night flying ratings. He had flown a total of 319 hours during the last 90 days.

No information regarding the flight engineer was given in the report.

1.6 Aircraft information

The aircraft had a valid certificate of airworthiness. By 29 November 1964, it had flown a total of 48 113 hours. It had undergone a 2 000-hour type III overhaul at 47 561 hours, and the last periodic 150-hour check had been made on 20 November 1964 at 48 024 hours. Daily and pre-flight inspections had been carried out regularly by qualified personnel. The latest flight records gave no information of irregularities that might have affected flight performance.

On take-off, the aircraft's total weight was 25 068 kg which was less than the maximum allowable weight of 33 500 kg.

Based on the 6 hours' endurance declared by the pilot, the aircraft carried approximately 6 000 litres of fuel. The type of fuel being used was not stated in the report. No load sheet was issued prior to the subject flight.

1.7 Meteorological information

Because of the disorganization of aerodrome services on the day of the accident, the meteorological observation centre was not operating. According to witnesses, the visibility was good at the time of the accident, the sky was clear and the wind from the west was light. The barometric pressure at aerodrome level was 1 018 mb.

1.8 Aids to navigation

The aircraft was equipped with the standard instruments prescribed for its category in operating condition.

1.9 Communications

No communications difficulties were mentioned in the report.

1.10 Aerodrome and ground facilities

The lighting of the runway and the taxiways was very deficient; only a few lights remained, the others were replaced by kerosene lamps.

1.11 Flight recorders

Not mentioned in the report.

1.12 Wreckage

Part of the right stabilizer was found on the take-off runway about 1 200 m from its end. The distance between the point from which the take-off run probably started and the first aircraft impact marks on the ground was approximately 1 410 m. The distance between these impact marks and the point where the aircraft finally came to rest was 200 m.

1.13 Fire

The aircraft was completely destroyed by post-impact fire.

The aircraft was equipped with a warning device and fire extinguishing system on each engine as well as in the two baggage holds. There were also hand extinguishers in the cockpit and in the passenger cabin. This equipment could not be used, however, because of the extent of damage to the aircraft as soon as it first hit the ground.

1.14 Survival aspects

Nine of the passengers seated in the rear of the cabin were thrown out of the aircraft through the torn-off cargo door and through the open cabin door and were injured to various degrees. One of them died from burns in hospital.

1.15 Tests and research

No information was contained in the report.

2. - Analysis and Conclusions

2.1 Analysis

The engines were so badly damaged by the post-crash fire that it was impossible to determine their condition or performance at the time of the accident. However, examination of the propeller revealed that the engines were at full power on first impact (blade tips bent forward) and that power was reduced, either consciously or involuntarily, before the second impact (backward twist of the blades right down to their base). It was, therefore, concluded that the four engines were in perfect operating condition at the time of the accident.

It was also concluded that, after a vain attempt to remain airborne following a take-off performed at critical speed, the crew, intentionally or unconsciously, reduced the engine power after the first impact with the ground in an attempt to lessen the damage.

Examination of the airframe wreckage revealed that the flaps were in the take-off position (15°) and that the flight control cables were not broken at the time of the accident.

A large portion of the right stabilizer was found on the runway. It was greatly distorted and its leading edge bore an imprint of a cylinder object. This imprint had been caused by a fuel drum which was found on the edge of the clearway.

This fuel drum was one of the many drums which had been previously obstructing the runway and which were removed to the edges of the runway when the aerodrome was recaptured by the regular army. This drum was probably blown on to the runway by another aircraft which took off shortly before. For operational reasons, the aircraft were taking off with no lights whatsoever and were guided only by the few runway lights still operating.

2.2 Conclusions

Findings

The crew were properly licensed for the aircraft type. The pilot-in-command had considerable flying experience on this type of aircraft and was fully qualified for the flight.

The aircraft had a valid certificate of airworthiness.

Aircraft maintenance had been performed by qualified personnel in accordance with current manuals and with the standard prescribed by the manufacturer.

The weight of the aircraft at take-off was well under the maximum permissible take-off weight and the centre of gravity was within limits.

The meteorological conditions were favourable.

The condition and operation of the aircraft instruments were not determined because they were totally destroyed by fire.

The radio equipment was operative.

The aircraft was provided with fire prevention equipment, which was of no use because it was destroyed before fire broke out.

No information could be drawn from the engines themselves. However, the condition of the propellers showed that the engines were operating normally and at full power on first impact with the ground.

Examination of the airframe revealed that the accident can be ascribed to loss of control through partial destruction of the right stabilizer and probable distortion of the elevator. These were caused by collision during take-off with an empty fuel drum on the runway.

Cause or Probable cause(s)

The accident was brought about by impact with a fuel drum which caused partial destruction of the right elevator, thus rendering the aircraft uncontrollable in flight.

3. - Recommendations

None were contained in the report.
