No. 22

Fleming Air System Transport (FAST), Douglas DC-3, PI-C569, accident at Barrio Camansi Norte, Numancia, Aklan, Philippines, on 21 December 1964. Report dated 10 May 1965, released by the Aircraft Accident Investigation Board, Civil Aeronautics Administration, Department of Public Works and Communications, Republic of the Philippines.

## 1. - Investigation

### 1.1 History of the flight

The aircraft was on a non-scheduled flight from Kalibo to Manila. It took off from runway 05 at 1740 hours Philippine local time and the co-pilot testified that the take-off was normal and all engine instruments were indicating within normal operating range throughout the take-off and during the initial climb. He further testified that approximately 20 minutes after take-off, severe vibration and misses, decreasing oil pressure and increasing oil temperature of the left-hand engine, were noted as the airplane was climbing to 2 200 ft. The left-hand engine was shut down, its propeller feathered, and shortly after the pilot-in-command reversed course and descended with the intention of landing at either Kalibo or Roxas Airports. Neither airport was rated for night operations. The flight proceeded to Kalibo. Precipitation was encountered on the way and the visibility was so poor that the crew failed to make visual contact with Kalibo Airport. At 1823 hours, a climb to 2 000 ft was attempted to clear the terrain on the way to Bacolod Airport, the nearest airport available for night operations. However, with METO power on the remaining engine, the aircraft not only failed to climb but also failed to maintain altitude with the airspeed decreasing to 80 mph. Several attempts to climb were made but were discontinued due to pre-stall warning. At 1835 hours with 500 ft altitude, the pilot-in-command decided to ditch and warned the passengers accordingly. At 1839 hours, the ditching was attempted but the airplane collided with coconut trees located approximately 500 ft from the Barrio Camansi Norte shoreline and crashed on the muddy bed of an abandoned fishpond on a heading of 300°, approximately 160 ft from the point of initial collision. The accident occurred around 1840 hours.

### 1.2 Injuries to persons

| Injuries | Crew | Passengers | Others |
|---|---|---|---|
| Fatal | 1 | | |
| Non-fatal | 2 | 16 | |
| None | | 20 | |

### 1.3 Damage to aircraft

The aircraft was substantially damaged.

1.4 Other damage

There was no other damage.

1.5 Crew information

The pilot-in-command, aged 37, held a currently valid senior commercial pilot's licence with a rating for DC-3 airplanes and an instrument rating. He had a total flying time of approximately 6 000 hours, of which approximately 2 000 hours were on the DC-3. His medical certificate was current but required that he wear correcting lenses while executing the privileges of his licence. He was not wearing them at the time of the accident.

The co-pilot, aged 32, held a currently valid commercial pilot's licence with ratings on L-4, L-5 and DC-3 aircraft. He had a total flying time of approximately 1 000 hours. In November 1964 after undergoing 5 days company transition for the DC-3 airplane, he was hired as a DC-3 first officer. His medical certificate was current without limitations.

On the day of the accident, both the pilot-in-command and the co-pilot had flown 7:45 hours on that same aircraft before departing Kalibo.

The third crew member aboard was a flight attendant.

1.6 Aircraft information

The aircraft had a currently valid certificate of airworthiness.

The aircraft log-book showed frequent malfunctioning of the left engine since it was installed on the aircraft and frequent discrepancies on the right engine during the last month.

On the day prior to that of the accident, significant discrepancies were logged by the first crew which flew the aircraft. These included 100 rpm drops on one magneto, on both engines, and required immediate corrective action. Maintenance work was performed after the flight; however, on the following flight carried out by another crew, some significant discrepancies on the left engine were again logged. No corrective action was taken; however, a company aircraft and engine mechanic released the aircraft for flight.

On the day of the accident and presumably during the flight prior to the ill-fated one, the pilot-in-command logged again discrepancies on the left engine (including a 300 rpm drop on the right magneto) and on the landing lights. However, no corrective action was taken. No maintenance or refuelling was carried out at Kalibo.

It was also found during the investigation that the maintenance records were badly kept. The total time of the left engine since last overhaul appeared on the log-book as 122:36 hours when it should have read 717:23 hours, and that of the right engine as 676:05 hours instead of 1 076:45 hours.

The pay load of the airplane was 4 672.2 lb, well below the allowable 5 737 lb. The maximum gross weight and the centre of gravity at take-off were determined to be within the allowable limits.

The fuel and oil on board were 275 and 47 gallons respectively. The type of fuel being used was not stated in the report.

1.7 Meteorological information

The accident occurred in darkness, and precipitation and poor visibility prevailed over Kalibo at that time.

1.8 Aids to navigation

Not pertinent to the accident.

1.9 Communications

There were no communications difficulties. When the emergency occurred, the co-pilot made a blind transmission on 118.1 Mc/s, declaring the emergency. At that time, the aircraft was flying at an altitude of approximately 1 100 ft over New Washington (7 miles east of Kalibo). This transmission was first received around 1817 hours by another aircraft, which then started to relay all radiocommunications between the aircraft and Romblon radio station. The last transmission from the aircraft was received at 1839 hours when it announced that it was trying to ditch.

1.10 Aerodrome and ground facilities

No information was contained in the report.

1.11 Flight recorders

Not mentioned in the report.

1.12 Wreckage

The accident occurred about 8 miles northwest of Kalibo Airport.

1.13 Fire

There was no fire.

1.14 Survival aspects

The pilot-in-command was thrown out of the aircraft 40 ft forward, when the left side of the nose section hit a coconut tree.

The passengers evacuated the aircraft through the opening created by a break at the periphery of the fuselage, forward of the main door. All the emergency exits were found closed. The left-hand exits were found safe-tied.

1.15 Tests and research

The left engine was subsequently stripped and subjected to technical examination. All the front row pistons were stuck frozen in their respective cylinders and distorted apparently by high temperature. The front master rod and all the front connecting rods were broken and the fractured ends were further deformed by repeated pounding.

All the rear row pistons, cylinders and connecting rods were found normal.

The right engine was likewise strip-examined and was found normal.

## 2. - Analysis and Conclusions

### 2.1 Analysis

According to the IFR flight plan, the aircraft should have climbed after take-off so as to reach 6 000 ft over Romblon, which is 25 minutes flight time from Kalibo. According to the DC-3's performance curves, the aircraft should have been capable, with the load carried, of reaching 6 000 ft altitude 20 minutes after take-off. Furthermore, it should have been able to maintain or climb to 3 000 ft altitude on one engine. The failure of the airplaine to reach 6 000 ft altitude 20 minutes after take-off suggested that both engines were not delivering their rated power. This was also substantiated by the fact that the aircraft could not maintain its altitude with the left propeller feathered, despite application of METO power on the right engine. The apparent failure of the right engine to deliver the desired power limited the courses of action available to the flight crew. The continuous loss of altitude left no other choice for the crew but to make an emergency landing. However, strip examination of the right engine did not reveal any deficiency and the Board could not factually determine why it was impossible to maintain altitude after the failure of the left engine.

### 2.2 Conclusions

#### Findings

The crew were properly certificated for the flight.

The aircraft had a valid certificate of airworthiness. Malfunctioning of both engines were reported on several occasions. Also some discrepancies in the maintenance records of the aircraft were found during the investigation. The gross weight and centre of gravity were within limits.

Precipitation and poor visibility prevailed over Kalibo at the time of the accident.

Strip examination of the left engine revealed that all front row pistons had seized in flight and that the front master rod and all front connecting rods were broken. Strip examination of the right engine did not reveal any discrepancies and no reasons were found to explain why the aircraft was unable to maintain its altitude with the left engine feathered and the right engine on METO power.

#### Cause or Probable cause(s)

The Board determined that the probable cause of the accident was failure to maintain safe single-engine speed and altitude following failure of the left engine.

The precipitation and poor visibility prevailing at the time of the accident over Kalibo and its vicinity and the failure on the part of the maintenance personnel to take action to correct discrepancies logged in the aircraft log-book, individually or collectively contributed to the cause of the accident.