No. 16

China Airlines, DC-3, B-309, accident at Nan-Pao Shan, China, on 2 January 1969. Summary of accident report, released on 11 February 1969 by the Civil Aeronautics Administration, Republic of China

1.- Investigation

1.1 History of the flight

Flight 226/227 was a scheduled domestic flight from Kaohsiung to Hualien and return with an intermediate stop at Taitung. It departed Kaohsiung at 1704 hours GMT on a VFR flight plan valid for the whole journey: after a 15-minute stop at Taitung it arrived at Hualien at 1829 hours. It departed Hualien at 1905 hours, arrived at Taitung at 1940 hours and departed Taitung at 1954 hours with an estimated time of arrival at Kaohsiung of 2040 hours. When the aircraft became overdue at Kaohsiung Airport the tower controller started calling the aircraft but in vain. He immediately notified Taipei Area Control Centre and requested it to initiate search action by radio communications. This was done without success. On the following day a T-33 of the Chinese Air Force Academy was instructed to undertake a search mission. It discovered the wreckage of the aircraft at 1855 hours. The co-ordinates of the accident site were 22°31'N - 120°44'45"E, at an elevation of 6 420 ft. The accident occurred at 2012 hours.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	5	19	
Non-fatal			
None			

1.3 Damage to aircraft

The aircraft was destroyed by the impact and the ensuing fire.

1.4 Other damage

None.

1.5 Crew information

The pilot-in-command, aged 39, passed his last medical examination on 4 August 1968. It was valid until 3 February 1969. He had been previously assigned by China Airlines to duties in Viet-Nam but returned to Taiwan in December 1968 to fly domestic services there. He had flown the route Kaohsiung-Hualien-Kaohsiung on 24, 25 and 31 December 1968 and on 1 January 1969. He had flown a total of 7 283:43 hours including 3 260:21 hours on DC-3 aircraft.

The co-pilot, aged 49, passed his last physical examination on 25 December 1968. It was valid until 24 June 1969. He had flown a total of 6 106:05 hours including 2 607:41 hours on DC-3 aircraft.

1.6 Aircraft information

The aircraft had flown a total of 37 587 hours, including 915:15 hours since the last overhaul, 100:37 hours since the last third stage inspection and 31:46 hours since the last first stage inspection. Since the last overhaul the left and right engines had accumulated 645:38 hours and 1 025:50 hours respectively.

The fuel used was 100 octane fuel.

1.7 Meteorological information

The ceiling en route was 6 000 ft to 8 000 ft with some low clouds between 1 800 and 2 800 ft. Above 6 000 ft in the mountain area where the accident occurred the wind was westerly with a speed of 20 to 30 kt. It was considered that after blowing over the mountain, the wind created a down current and that some cumuli may have formed over the mountains with associated turbulence.

It was sunlight at the time of the accident.

1.8 Aids to navigation

Both the Kaohsiung and Taitung NDBs were operating satisfactorily.

1.9 Communications

Air to ground communications were normal until 2000 hours, when the last message from the aircraft was received.

1.10 Aerodrome and ground facilities

Not relevant.

1.11 Flight recorders

None fitted.

1.12 Wreckage

The aircraft was completely destroyed by the impact with the mountain and the ensuing fire. Both wings were broken, both engines were seriously damaged with their crankcases cracked open, and both propellers were severely bent and were found at a pitch of 26°. All instruments were destroyed by the fire, except one altimeter, which was found outside the crew cabin, indicating 7 100 ft.

1.13 Fire

After it struck the mountain the aircraft burst into flames and the fire extinguished itself.

1.14 Survival aspects

It was estimated that all occupants of the aircraft were killed at impact. Some of the bodies were found in the forward part of the fuselage, but most of them were scattered over the area in front of the aircraft's tail.

2.- Analysis and Conclusions

2.1 Analysis

Based on the DC-3 performance and the air route for the flight, it was assumed that the aircraft after taking-off from Taitung at 1954 hours, made a turn to the right, climbed to 1 000 ft, then turned again southward climbing along the shoreline. When approximately 23 miles southwest of Taitung it could have reached an altitude of over 7 000 ft and could have then headed for Kaohsiung. It would have taken the aircraft approximately 18 minutes of flight to reach the site of the accident at the Nan-Pao Shan mountain, therefore, the time of the accident was computed as being 2012 hours.

Wreckage examination revealed that neither of the propellers was feathered and that both were at a normal pitch setting. Marks left on the trees at the accident site appear to indicate that the engines were operating at the time of the accident. The aircraft's radio equipment was in good condition and the fact that no emergency call was made by the aircraft after its take-off from Taitung seems to confirm that no emergency conditions were encountered before the accident.

The wreckage of the aircraft was very concentrated in area and no evidence of an explosion or a fire prior to impact was found.

A survey of the accident site revealed that the aircraft was on a heading of 325° when it first struck the tree tops. The computed course of the aircraft was west northwest; due to the forecasted presence of cumuli over the mountains, therefore, it is possible that the aircraft had altered its course in order to avoid a cumulus formation.

The aircraft wreckage was found on a 35° slope nose up and tail down and no parts were thrown forward of the main wreckage. Furthermore no signs of high impact damage were found on the nose of the aircraft, indicating that the speed of the aircraft at impact was not high and that the aircraft was in a stall attitude.

2.2 Conclusions

(a) Findings

It was believed that the accident occurred in visual flight when the pilot-in-command altered his course to avoid cumulus cloud and after having done so found himself in area of higher mountains which he could not clear.

(b) Cause or
Probable cause(s)

The aircraft, while flying in a downdraught of the mountain area, suddenly met turbulence and a down current so that its altitude abruptly dropped, and it hit the trees and crashed.

3.- Recommendations

It was recommended that China Airlines shall be instructed to adhere strictly to visual flight rules when flights are made under visual meteorological conditions.

Scheduled domestic
En route
Collision - rising terrain
Weather - down draught

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