DEPARTMENT OF CIVIL AVIATION

MALAYSIA

AIRCRAFT ACCIDENT REPORT

BELL 206B 9M-SAE

TAMBISAN - SABAH

REPORT NO: 05/84

BASIC INFORMATION

OPERATOR	:	SABAH AIR SDN. BHD.
AIRCRAFT TYPE	:	BELL 206B
NATIONALITY	:	MALAYSIAN
REGISTRATION	:	9M-SAE
PLACE OF ACCIDENT	:	PERMAN HUTAN, TAMBISAN - SABAH
DATE AND TIME	:	20TH DECEMBER, 1984 AT 1215 HOURS

ALL TIMES IN THIS REPORT ARE
LOCAL TIME (LT) i.e. GMT + 8 HOURS

SYNOPSIS

The accident was notified to the Department of Civil Aviation at 1645 hours on 20 December 1984 by Penerbangan Sabah Sdn. Bhd. and the investigation commenced early the following morning.

The aircraft had landed earlier at the camp site where four passengers disemberked. After a short stay and following engine start up the Commander performed a towering take-off. At a height estimated sixty feet, the helicopter was seen to be flying forward and sideways, and moments later the main rotor blade struck a coconut tree. The aircraft went out of control and fell to the ground in a nose down attitude. The Commander although slightly injured exited the aircraft through the hand door. Although the main rotor head and blades had sheared off the engine remained running for approximately thirty minutes after impact. The aircraft was destroyed.

1. FACTUAL INFORMATION

1.1 History of the Flight

1.1.1 Arrangements were made by 4 passengers from Sri Gabungan to charter the helicopter on 20 December 1984 to enable them to inspect a logging camp.

1.1.2 At 1100 LT, 9M-SAE with 5 persons on board departed Sandakan for Perman Hutan. The enroute weather was good and upon arrival at the destination, a low pass was made with an understanding that a vehicle would be despatched to the place of landing. On completion of the first low pass, the Captain decided to carry out another low pass which he claimed was necessary to make assessment on wind and Landing Pad (LP)

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condition. However, this flight was uneventful and the helicopter landed safely at Perman Hutan at around 1155LT.

1.1.3 At approximately 1205 LT, the Captain carried out the engine start up for the return journey to Sandakan. The weather was fine and no abnormality reported.

1.1.4 On completion of the start-up the Captain hovered the helicopter and manoeuvred it to face south. He then moved sideways to the right (West) and followed by a spot turn to face East. This was followed by the Pre-Take Off Checks where he also determined sufficient power to clear all surrounding obstacles.

1.1.5 After being satisfied with the surrounding obstacles, the Captain initiated a towering climb take off. There was excess torgue and the helicopter had no difficulty in gaining vertical height. Shortly before clearing the canopy of the trees at around 18 meters, the Captain claimed that he had difficulty in maintaining direction and the helicopter was also seen to be flying sideways and forward. Moments later the main rotor blade struck the upper portion of the coconut tree and went out of control. The aircraft fell to the ground in a nose down attitude. The Commander although slightly injured exited the aircraft through the right hand door. Although the main rotor head and blade had sheared off, the engine remained running for approximately thirty minutes after impact. The aircraft was destroyed.

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1.2 Injuries to Persons

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Serious	-	-	-
Minor/none	1	-	-

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed.

1.4 Other damage

1.4.1 A coconut tree was severed into two by a double strike of the main rotor blade.

1.5 Personnel information

1.5.1 Commander : Male

Licence : Current Malaysian CPL 802(H) expiring 31.12.85

Flying Experience : Total hours 1218.55
Total hours on type 756.15

1.6 Aircraft Information

Type : Bell 206B Jetranger III

Date of Manufacture : 1977

Total Airframe Hours : 2297.26

Total Engine Hours : 2563 TSN

Certificate of Airworthiness : Malaysian valid until 9th March 1985

Certificate of Registration : Malaysian issued on 7th March 1981
Previously registered as 9M-RMJ

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Maintenance	:	All recorded maintenance and rectification work conformed to the specified maintenance schedule and no record of any defect on repair likely to have contributed to the accident was found.
Maximum authorised take off weight	:	3200 lbs.
Estimated weight at take off	:	2396.2 lbs.
Estimated centre of gravity at take off weight	:	113.00"

1.7 Meteorological Information

1.7.1 The weather forcast for the area at time of the accident obtained from the meteorological office Sandakan was as follows:

Winds	:	Surface 060 degrees 08 knots 1000 feet 070 degrees 10 knots 3000 feet 050 degrees 10 knots
Weather	:	Mainly overcast. Tempo (0800-1800) scattered moderate intermittent rain.
Surface visibility	:	20 km. and 4 km. in rain.

1.7.2 The accident took place in daylight in good visibility. The weather at that time according to the commander was deteriorating with a thunderstorm approaching the accident site from the North West. Estimated surface winds between 10-15 knots.

1.8 Aids to navigation

1.8.1 All radio communication and navigational aids around Sandakan area were serviceable.

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1.9 Communications

1.9.1 Satisfactory radio communications were maintained with 9M-SAE by the relevant Air Traffic Controller (ATC) prior to the accident.

1.9.2 9M-SAE was on the ground at Perman Hutan LP for a very short period. However, no communication was established prior to the departure. After the accident, Search And Rescue (SAR) operations was not activated. This was due to poor communication in Perman Hutan aggravated by the uneffectiveness of the monitoring system as regards SAR by relevant authority.

1.10 Aerodrome Information

1.10.1 Perman Hutan which is a coastal LP provides an ideal means of transportation to service the need of the logging camp. The LP with a dimension of 23 meters by 13 meters is surrounded by coconut trees of about 38 meters tall. The condition of the LP was satisfactory however it was an abandoned LP with no provision for even wind sock.

1.11 Flight Recorders

1.11.1 Not applicable

1.12 Wreckage and Impact Information

1.12.1. There was clear identifiable evidence that the main rotor blades had struck the coconut tree as a section of the tree approximately 0.6 meter in length had been chopped away when the blades had made rotational contact. A blade then struck the forward left side of the canopy above the flight deck. The tail boom impacted

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the remains of the tree trunk, and the foliage, including the branches that got entangled to a tail rotor blade. Impact of the aircraft was vertical with a slight nose down attitude and came to a rest at the base of the tree it had struck. Debris from the flight deck canopy and instrument panel was scattered over an area to the left of the impact position. After double striking the tree and canopy, the main rotor head, blades and part of the mast sheared off and landed to the right of the main wreckage. The engine continued running for approximately thirty minutes as the Commander was unable to shut it down by normal methods. The oil supply line had been severed, it was not until the engine began to overheat did it come to a stop.

1.12.2 Subsequent examination of the wreckage indicated that all systems were operating normally. Flying and engine controls were found intact though impact damage was evident. Ample fuel for the intended flight was available.

1.13 Fire

1.13.1 There was no fire. A flame was seen to emit from the exhaust pipes just prior to engine shutting down.

1.14 Survival Aspects

1.14.1 The accident was survivable.

1.15 Tests and Research

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1.15.1 A study made on the manning establishment of Sabah Air disclosed that the Sandakan operations was headed by a junior pilot. Though there were some senior pilots who had taken up their appointments before, Sabah Air was unsuccessful to retain them for a longer period. This was probably due to the unattractive conditions in Sandakan.

1.15.2 The Commander crew duty period and total flight time for the month of October, November and December 1985 were as follows:-

	October	November	December
Total Duty Period	179.40hrs	172.05hrs	110.56hrs.
Total Flight time	68hrs	72.35hrs	49.15hrs.

The above hours were within limits however, most of the totals were high when compared to the total hours accumulated by pilots in Kota Kinabalu.

1.16 Additional Information

1.16.1 The Commander of the aircraft was found to be conversant with the towering take off technique. Previous flight checks conducted on him showed that he had no difficulty in this exercise. However, prior to the accident he decided not to use the full length of the LP and also allowed the aircraft to move forward without positively clearing the obstacles.

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1.16.2 The helicopter was operating into a coconut grove clearing at a timber camp site close to a shoreline. There were no aids to navigation, meteorological services or wind socks.

2 ANALYSIS AND CONCLUSION

2.1 Analysis

2.1.1 There was nothing technical which could have had a bearing on the accident. The Commander had stated that the aircraft, engine and associated systems were functioning normally.

2.1.2 The landing area was a small clearing in between coconut trees. The height of the trees were approximately 38 meters. The area was reasonably enclosed and there was a possibility that an accurate assessment of wind speed could not be made.

2.1.3 The weather forcast for the area at the time of the accident obtained from the meteorological office Sandakan was fine. Though the Commander confirmed similar weather condition, the wind condition at time of departure was 10-15 knots. He did not remember whether there was any swaying of the foliage on the trees, although at that time the sea was considered to be rough. This could have been a vital reminder that the velocity of the wind was greater than assumed.

2.1.4 The towering climb take off was conducted in an Easterly direction. Since the wind was coming from the sea, it assisted in providing better performance. It was also noted that the take off did not utilise the full length of the clearing. In this respect it could have been a different story had he exercised better airmanship and judgement.

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2.1.5 The level of competency displayed by the Commander for the towering take off was questionable. He did not clear the obstacle prior to transition to forward flight. Study made on the take off profile indicated that he did not climb vertically but instead allowed the aircraft to move forward and subsequently made contact with the obstacle. Wind could have been a contributory factor, however, his inability to control the aircraft under such condition was inexcusable.

2.1.6 Sabah Air had appointed a junior pilot to take charge of the Sandakan operations. An inspection of the operations revealed that the administration was satisfactory whilst the ability to supervise the conduct of the operations was yet to be proven. Though there were only two pilots inclusive of the pilot incharge, the total hours flown by the operations was high. With a high rate of work load it wise to have a senior pilot incharge to be stationed at Sandakan. This is to provide better supervision especiallly for pilots having about 1200 hours total flying time.

3 CONCLUSION

3.1 Findings:

(i) The aircraft was properly certificated in accordance with appropriate DCA requirements.

(ii) The Commander was properly certificated and qualified for flight.

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(iii) Examination of the aircraft revealed no evidence of malfunctions or unserviceability that would have contributed to this accident.

(iv) The Commander's assessment of the wind velocity (easterly 10-15 knots) at that time may have been inaccurate.

(v) At the start of a climb out from a restrictive LP and at a height of approximately 60 ft. the Commander experienced directional difficulty which he could not control.

(vi) The Commander carried out a towering climb take off without utilising the full length of LP.

(vii) The Commander allowed the aircraft to move forward and sideways without positively clearing the obstacles.

3.2 Cause or Probable Cause(s).

3.2.1 The probable cause of the accident was failure of the Commander to maintain directional control under wind condition of significant.strength. He also allowed the aircraft to move forward and sideways without positively clearing the obstacles.

4 RECOMMENDATION:

4.1 The following recommendations were made:

(i) Aircrew should be reminded to ensure that all reasonable precautions are made to assess weather

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conditions as accurately as possible when making lift offs from restrictive encompassed area. Aircrew should also exercise good airmanship when operating in restrictive LP.

(ii) All junior pilots are to be checked out by a qualified Flying Instructor prior to operating into all restrictive Landing Pads.

(iii) Sandakan operations should be headed by a Senior Pilot whose supervisory role is beyond question.

(iv) The privileges of the Commander's licence should be reviewed so as to ensure safe conduct of future flights.

(vi) DCA and Sabah Air should introduce a better radio communication system in order to monitor and determine the state of operations especially those involving flights in and out of Landing Pads.