

DEPARTMENT OF CIVIL AVIATION MALAYSIA

AIRCRAFT ACCIDENT

BELL 206 9M - AUM
23NM WEST OF BATU MELINTANG
KELTANTAN MALAYSIA - 03 FEB 1983

OPERATOR : Eagle Aviation Services Sdn Bhd

AIRCRAFT : TYPE : Helicopter Bell 206
MODEL : 206B Jetranger
NATIONALITY : Malaysian
REGISTRATION : 9M - AUM.

PLACE OF ACCIDENT : Valley, 29NM from Batu Melintang 1000 meters south of Jeli/Grik Highway.

DATE OF ACCIDENT : 03 FEB 1983.

SYNOPSIS

The duty inspector of Air Accidents was informed of the accident at 1000 hrs local Malaysian Time on the 04 February, 1983. The investigation team arrived at Kota Bharu by 1600 hours on the same day and the party arrived at the crash site at 1137 local time on 5 February, 1983.

9M-AUM got airborne from a helipad H7 at 1759 for the purpose of retrieving 9 men who were working on the tower back to their base camp. With four souls on board the aircraft was approaching tower 229 to pick up another man and on realising that the man on tower 229 was not ready the pilot decided to proceed to the next tower. He initiated a turn to the right thinking that all the eight cables were already underneath the aircraft. About half-way through the turn the pilot realised that two of the cables were still above the aircraft. The pilot took avoiding action but in the process the main and the tail-rotors came into contact with the cables. Directional control was lost and the pilot autorotated the aircraft between trees. All four occupants survived while the aircraft was severely damaged.

FACTUAL INFORMATION

1.

1.1 History of flight

The pilot started to prepare himself for the day's work around 0730 in the morning and after the usual briefing the external checks of the aircraft, he departed Kota Bharu at 0835 for Batu Melintang on 3 February 1983. The main bulk of the flying time consist of transporting personnel from various tower. The first task was to transport 20 personnel from Batu Melintang into tower 181, and after doing this the pilot continued further down the cables line towards Grik and landed at a point called (H7). Further transportation of personnel were continued for further tower inspections.

This routine inspections were conducted from tower (219) to tower (242) and the flight was stopped at around 13:30 hrs. At around 1645 hours the pilot started again and continued to proceed with bringing personnel out of the towers mention above. There were nine men remaining to be pick up (one at each tower) and the time was approaching 1800 hours. The pilot was to pick up the 4th. man along the tower but he was not ready. The pilot then decided to back up, turn and climb away to another tower but misjudged and went under the cables. He decided to turn away at the last moment but the rotors struck the wires. He then felt that he has lost directional control and tried desperately to lower the collective and crashed in between the trees in thick jungle about 150 meters from the hanging cables.

All occupant escaped from serious injuries except for minor cut on the head to two of the rear seating passengers. They walked out to the army post about 1000 meters to the north of their position about 900 feet higher then their crash location. The army camp personnel assisted them to Batu Melintang and medical attention were given by the Medical Officer there.

1.2 Injuries to persons.

Injuries	Crew	Passeger	Crew
Fatal	-	-	-
Serious	-	-	-
Minor/NONE	-	2	-

Two occupant of the rear seat suffered cut on their head and the injuries were fairly minor and both the front passenger and the pilot escape injury.

1.3 Damage to aircraft

A general briefing of the helicopter itself, the position of the helicopter is on the bank of some 60° angle. The angle of entry looks virtually vertical and the helicopter ended up nose down on the bank with the main rotor dug well into the ground and upside down. The instrument panel has broken off to the starboard side, the collective and cyclic levers are both intact and the pilots seats, passengers seats and straps were intact. One door is down in the valley, and the other door is still attached on the left hand side.

The main rotor head itself is completely intact and 3' 6" of each main rotor blade is attached to the main rotor head. The head itself is again attached to the main rotor shaft and the swashplate are still attached to the gearbox. The main rotor pitch change rods themselves are both still connected to the main rotor head and they have sheared at the lower end but the end fittings onto the swashplates are both still intact with the swashplates. Both vertical controls of the swashplates down to the bell cranks that go along with the fuselage appeared to be still intact.

The last stage turbine wheel is turning reasonably freely. The whole engine assembly does not seem to be suffering from much damage. The drive shaft of the tail rotor from the engine gearbox is still intact. Both the forward end and the clutch assembly are all intact.

The tail boom broke at the mid section and the tail rotor gear box both sheared off from its attachment. The coupling is complete at the aft end and the remainder of the couplings are complete and the tail rotor drive assembly looks complete. One of the tail rotor blades is undamaged and the other one has lost some 2½".

When turning the tail rotor shaft assembly under the gearbox and out towards the rear fuselage the assembly turns and the free wheel unit appears to be working.

The sequence of damage started when the tail rotor struck the top cables, causing it to lose approximately two inches of the propellor tip. The vibrations that followed caused the tail rotor gearbox to shear and as the aircraft sank into the jungle the main rotor blades struck two trees and both the blades were cut off before the underpart of the aircraft crashed on the hill slope with 75° slant angle to the vertical.

The aircraft then rolled over to the right and was cushioned by thick undergrowth and jungle vine (rattan) which inturn stop the forward motion of the sliding helicopter.

1.4
1.4 Other Damages: Nil

1.5 Personnel information

The pilot is an Australian citizen age 52 with valid Malaysian Commercial Pilot's licence and qualified to fly the Bell 206. Has been operating in this company for the past one year. He had vast experience in coporate helicopter flying and to date has flown a total of 19,900 hrs. In the last 6 months has been involved in cable laying flights in this region. His Commercial Pilot's Licence is valid till 31st. January, 1983.

1.6 Aircraft Information.

The aircraft is a Bell 206B helicopter registered as 9M-AUM on 5th November, 1975 by Penerbangan Sabah. It has been acquired by the present company to continue this cable laying work since November, 1982. Ever since the aircraft was brought back to Peninsular Malaysia from Sabah Air in Kota Kinabalu the aircraft has flown for 316 hours up to the day it crashed. Total hours flown by this aircraft is 4357.44 hours, the next check one is due on reaching 4380.40 hours. Check two was done on the 25 January, 1983. Aircraft was found to be in good condition prior to the accident. No other revelant information that could implicate the cause of this accident were found during this investigation.

1.7 Wreckage information

Most of the aircraft parts were recoverable at the crash site as describe in the damage report. The seat belts of all occupant were found to be intact and the cabin area was still in shape with the nose of the helicopter twisted to the right. The emergency Locater Transmitter was

"on" when the investigating crew found it, although there was no aircraft that have reported hearing the transmission. The fire extinguisher and the first aid kit were recovered from the wreckage. The right main door was flung open by the impact and this was confirmed by the crew and passengers.

The tail section of the helicopter has been recovered and further examination confirmed the missing pieces and evidence of wire strike is conclusive. Other parts of the wreckage were also examined after the salvage.

1.8 Medical and Pathological information

The damage to the aircraft was extensive, but the cabin area remained intact, the pilot suffered slight scratches at his right ankle, and his front passenger was unhurt. The two rear passengers sustained cuts in the middle of the head which are skin deep only. This apparently was caused by the swinging effect as the aircraft rolled over its back and causing the head to slide along the cross member of the cabin which is dented inside. Other than shock, the injuries were minor.

1.9 Analysis

Although the pilot felt that he has struck the cables with the main rotor first, followed by the tail rotor, the investigators could not find any evidence of main rotor strike. However the tail rotor damage was fairly conclusive, and from the evidence available the sequence of actions prior to the crash and moment after the crash could be easily traced.

The helicopter was coming in to the pick up point, which is about 20 meters from the Pylon (228). On arrival he realised that the working crew was not ready to be picked up and decided to back up and turn around for the climb across and above the cables. Half way during the climb and going forward about 20 knots, the pilot realised that he did not clear all the cables and saw one immediately in front of him. He then turned the helicopter to the right but it was too late and the rotors struck the cables. Severe vibrations were felt coming from the tail rotor blades which had lost about two inches of its tip. The vibration soon sheared off the tail gearbox attachment and as a result total directional control was lost.

The accident investigators went into great details about how this could have happened and in the course of this probe, it was noted that the pilot did not seem to worry too much about aircraft accident. The operations themselves have made the pilot and management immune to danger and further investigation revealed that the pilot has overflowed his monthly hours. Crew duty times were not adhered to. The crew duty time for the pilot by far exceeded the regulations figures.

The flying hours indicated that the pilot flew for 316 hours in the last 89 days with only the short breaks of not more than two days. In one occasion the pilot flew 36 hours in less than a week. The question of fatigue is evident. Supervision of crew duty time and flying hours were completely neglected, it was left entirely to the pilot who has accepted the fact of risk for reward. Medical aspects were also noted such that the pilot did not wear spectacles when flying although his medical limitations clearly indicate the need to wear them when flying.

The operations by itself is hazzardous enough. The need for close supervision of the whole operation is mandatory.

Other factors

a. Overworked and Fatigue factors affecting flying .

During the last four days before the accident, investigations revealed that the flight time flown was 17 hours 36 minutes. Although this does not show much about fatigue, the crew duty time was exceeded without adequate rest, The following figures indicated the crew duty time.

- i. Day one - 12 hours 18 minutes.
- ii. Day two - 11 hours 43 minutes.
- iii. Day three - 11 hours 56 minutes.
- iv. Day four - 11 hours 46 minutes.

Total amount of working hours which is more than 45 hours in four days is considered substantial when there was no rest in between.

b. Poor supervision of flying operations.

In the last month prior to this accident the pilot flew some 122 hours, starting from January, 1st to January, 31st 1983. The crew duty time was phenominal, averaging from 10 to 12 hours a day which makes up to 300 hours or more in a month. This is close to double the normal working time.

In this particular case the pilot was left on his own to supervise his flying hours and flight duty time, and having to work day in and day out, with very little rest it was difficult for him to see any flaw in his operations. There was no standby pilots available, the company headquarters is 350 miles away and contact is by phone only. As a result of this difficulty he exceeded his flying hours and even overlooked to renew his medical and flying licence. Other than the normal engineering matters discussed with the engineer on site, the operational supervision was nil.

In the last 30 days prior to the accident the pilot flew 122 hours. This amount is 22 hours more than the max allowable time for normal operations. Considering that this operation as a difficult and hazzardous task, it can be said here that the flying hours was grossly exceeded to a point beyond normal safe operations, and the safety of flights became a suspect. The company did not make any attempt to improve this situation. The management is directly responsible for monitoring these limitations and this has not been seen to be done at all.

c. Referring to the previous accident which occurred on 29th September, 1982, it is interesting to note that the pilot flew some 126 hours in the last thirty days prior to the accident, on both occassion the crew duty time and the flight time were grossly exceeded.

From the various information received, these human failings were clearly seen which have attributed to these accidents . The management have made no attempt to remedy this failings, the fact that the pilot have overflown his monthly limitiations should have initiated the management the need for more pilots and a much closer supervision.

A break down of flying hours and crew duty time is shown below:

					<u>Hours</u>	<u>Crew Duty Time</u>
June	4	to	30 June	1982	- 77:10 hrs.	111 hrs.
July	1	to	31 July	1982	- 123:40 hrs	250 hrs.
August	1	to	18 August	1982	- 70:35 hrs	120 hrs.
Sept	3	to	29 Sept	1982	- 126:26 hrs	267 hrs (crashed)
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December	1	to	29 Dec	1982	- 71:25 hrs	220 hours.
January	1	to	31 Jan	1983	- 122:35 hrs	305 hrs (crashed)

The two accident occur when the crew and flight time were grossly exceeded (normal limitations is 100 hours and crew duty time as 160 hours)

1.10 Cause of accident

The finding of the investigation revealed that the helicopter loss directional control after a cable strike which was attributed by poor judgement as a result of poor supervision and possible fatigue.

Recommendation

In the course of the investigation, several points have been highlighted.

- a. Supervision of crew at working area was inadequate, therefore the committee recommends that operators must ensure that the necessary arrangements for close supervision of the pilot and other related crew be maintained at all time.
- b. The total flying hours must be closely monitored to ensure that the 100 hours within 30 days limit is not exceeded.
- c. The Captain was found to have been overworked as a result of numerous appointments i.e. line pilot, operations manager supervisor, and administrator. This had jeopardised Flight Safe, and therefore the committee recommends that the Captain be specialised solely as a line pilot.
- d. The Captain failed to renew his flying licence, it is therefore recommended that the company monitor the renewal of all licence and endorsement.
- e. In view of too many infringement and violations of the existing rules and regulation, it is recommended that the Captain's Professional Pilot's Licences be withdrawn permanently with effect from the date of accident.
- f. Due to poor supervision of this operation the committee also recommends that the operator's permit be suspended with immediate effect.

.....
(CAPT. HUSSIN MOHD NOOR),
Investigator of a/c Inccident,
b/p: Ketua Pengarah,
Jabatan Penerbangan Awam Malaysia.

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Recommendation

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