

DEPARTMENT OF CIVIL AVIATION MALAYSIA

AIRCRAFT ACCIDENT

BELL 206 9M - AVJ  
23NM WEST OF BATU MELINTANG  
KELANTAN MALAYSIA - 29th, SEPT, 82

OPERATOR : Eagle Aviation Services Sdn, Bhd,  
AIRCRAFT : TYPE : Helicopter Bell 206  
MODEL : 206B  
NATIONALITY : Malaysian,  
REGISTRATION: 9M - AVJ,  
PLACE OF ACCIDENT : Valley, 23NM from Batu Melintang along  
the Jeli/Grik Highway,  
DATE OF ACCIDENT : 29th, SEPT, 1982.

SYNOPSIS

The duty inspector of Air Accidents was advised of the accident by Eagle Aviation Services Sdn, Bhd at about 1400 local Malaysian time on 29th, Sept 1982. As the accident was survivable, the physical investigation of the accident was initiated on the next morning.

9M-AVJ with four soul on board departed a helicopter pad along the Jeli/Grik Highway for a routine cable laying operation at about 0918. The helicopter which was equipped with under slung capability (nets) was tasked to proceed to pylon 227 and terminated at pylon 221. As the helicopter was crossing pylon 222, the nets which were dangling 25 feet below the helicopter, were caught onto a metal frame of the tower. It lost directional control and finally plunged into a valley which was approximately 150ft lower.

All the occupants survived in the accident while the helicopter was severely damaged.

FACTUAL INFORMATION

1.  
1.1 History of flight

The helicopter with 2 PGB bearing a registration number 9M-AVJ departed Kota Bahru airport for Batu Melintang at 0830L on 29th, Sept 82. The flight was uneventful and no discrepancy in the function of the engine, flight controls and other systems were reported during the pre and post flight inspections. On arrival at Batu Melintang a battery was unloaded and since they were ahead of schedule, they were instructed to transport a few boxes of concrete to nearby pylons. On completion of this task, the helicopter was

flew back to Batu Melintang for refuelling. About 38 gallons of fuel was replenished and with a total of 4 PDB, the helicopter with a net under its body then proceeded to the operational area at 0918 Lt.

The operational area is situated about 23NM to the west of Batu Melintang and about 18M to the south of Jeli/Grik Highway. It is a typical Malaysian contour covered mainly by the dense equatorial forest over a rugged and undulated terrain. It was at this area that the work of cable laying was carried out. The project which was initiated by Lembaga Letrik Negara was intended to distribute electrical power to various region of Peninsular Malaysia.

On arrival at pylon 227, the captain immediately hovered the helicopter and it was at this stage that he was instructed by the foreman to hook additional nets thus making a total of 3 nets. Although there was no item carried in the net, the flight was intended solely for observation purposes of pylon 227 up to pylon 221. The helicopter then proceeded in an easterly direction and as the flight was visual, the Captain decided to follow closely over the undulating terrain. As the helicopter was transiting over pylon 222, a loud thud was heard. The three nets which were trailing 25 feet below the helicopter were accidentally caught onto a metal structure of pylon 222. The reaction forcefully deflected the nets and finally caused the nets to entangle in the tail rotor. This was immediately followed by a severe vibration and partial loss of directional control. The pilot was unaware of what had happened and the only indication he noticed was a violent yaw in a clockwise direction. Unable to control the situation, the helicopter finally crashed into a valley in between two hills of about 60° gradient. The final flight path heading was about 110° and during the impact, the cockpit section and the tail rotor absorbed most of the impact forces. The impact caused severe destruction to the two components and at the same time seriously injured one of the occupants. It finally came to a rest at an approximate heading of 060°, pointing up hill on its starboard side.

The pilot and the occupants immediately evacuated the helicopter and without much delay left the area for possible assistance. They waded through the jungle using their normal instinct and finally arrived at the army camp at about 1200Lt. Fortunately a doctor was present and medical aid was provided. They were later brought to Kota Bharu by road for further medical treatment.

1.2 Injuries to persons.

Injuries	crew	passenger	others
Fatal	-	-	-
Serious	-	1	-
Minor/None	1	2	-

Only one occupant was seriously injured. He had severe burnt on his left cheek plus a deep cut on his forehead. Other occupants inclusive of pilot suffered from minor injuries.

### 1.3 Damage to aircraft.

The tail rotor assembly had broken away forward of the vertical fin and the transmission shaft had sheared, but the tail rotor assembly was still attached to the gear box and controls, one blade being intact but bent, the other had three quarter area/length missing, the net was still entangled.

The main rotor had sheared under the head assembly, one blade was intact for 90% but badly damaged by rotational impact.

The other blade was missing for three quarters of its length and various pieces were found scattered around the area, but due to the terrain we were unable to locate many of the pieces.

The pitch and cyclic rods to the lower swash plate were found intact and the pitch rods from swash plate to each blade were intact to each end, but the tubes were both sheared in line with the main rotor shaft.

The whole main structure of the helicopter had severed at approximately station 81.27 but had been retained in close proximity due to electrical looms and flying control operating rods.

The net was found detached from the external cargo hook and the hook assembly was in the released position.

The hook assembly had not been released from the cockpit either manually or electrically by the pilot.

The hook assembly and mechanism had sustained impact damage but the severing of the structure placed a tensional overload on the bowden cable to the release box and this tension remained with hook still released at time of inspection.

The pilot had commented that the engine was still running after impact, it was still possible to rotate the power turbine manually by access through the exhaust duct.

There does not appear to have been any mechanical malfunction prior to the snagging of the net and its subsequent engagement with the tail rotor.

The aircraft documentation has been requested and a full assessment will be carried out in respect of the maintenance history.

### 1.4 Other Damages.

Other damages incurred by the accident were negligible.

### 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 corporate helicopter flying and to date has flown a total of 11,000 hours. 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 206 registered in Malaysia in March, 1977 on Public Transport Category (Passengers) and has a current Certificate of Airworthiness. The aircraft was certified as airworthy by all the personnel concerned. There was no evidence of discrepancies as far as the serviceability of the aircraft was concern.

### 1.7 Wreckage information.

Most of the aircraft parts were found with the exception of a section of the main rotor blades missing after hitting a tree trunk lying on the ground. The cockpit area were badly damage with both main door completely detached. 25 feet of rope and a net were still entangled with the tail rotor. (See photograph attached). From the wreckage examinations it was obvious that the entanglement started from the full rotor section.

### 1.8 Medical and pathological information.

Although the damage to the aircraft was extensive, the pilot escaped with minors bruises. However the front passenger suffered a deep cut in the forehead. A medical check up was completed by the medical authority in Kota Bharu inclusive of an X-ray report for the pilot. There was no serious injury and the pilot was discharged the next day. The two rear passengers walked out of the wreckage unstratch.

### 1.9 Analysis.

The pilot was interviewed on the third day, and a comprehensive account of the events leading to the accident were recorded and history of the flight could be established. There was no complications and this investigation was a fairly straight forward case of misjudgement by the pilot.

### 1.10 Cause of accident.

The pilot made an error of judgement by flying too low over the metal pylons causing it to hook the metal frames and thus entangled the underslung net into the tail rotor section of the helicopter, which in turn causes the lost of directional control resulting in the crash.

**1.11 Recommendation**

In the course of this investigation, several points were highlighted and the following recommendations were made:

- a) Carriage of underslung cargo nets for repositioning, inspections and transit should be kept to the bare minimum, as this procedure is hazardous at low altitude over difficult terrain.
- b) The number of "Radio Transmission" to controlling authority should be reduced i.e. one every one hour instead of every 15 minutes is considered sufficient. It is important every time he tries to make radio contact, which creates an unnecessary movement.
- c) The pilot has been flying alone for more than 8 months, therefore it is recommended that he will be flight tested on his proficiency in this type of operation before commencing further flying activities.
- d) His privilege of exercising his licence be suspended till completion of para (c), and any other recommendations resulting from this check flight.
- e) It is also noted that the communication between crew and pilot were done by the use of hand signals. As the crew and pilot do not speak the same language, this procedure is found to be the most suitable method. Communication between pilot and ground workers is weak and at time hazardous. The company should review the use of common language together with "F" and "walkie Talkie" type of communications to accommodate the various phases of operations.