AAIB Bulletin No: 4/95 **Ref: EW/G94/12/12** **Category: 2.3**

Aircraft Type and Registration:	Bell 206B JetRanger III, G-BBNG	
No & Type of Engines:	1 Allison 250-C20 turboshaft engine	
Year of Manufacture:	1968	
Date & Time (UTC):	25 December 1994 at 1250 hrs	
Location:	Cowmire Hall, Crosthwaite, Lancashire	
Type of Flight:	Public Transport	
Persons on Board:	Crew - 1	Passengers - 2 (not yet boarded)
Injuries:	Crew - None	Passengers - 1 Serious
Nature of Damage:	Substantial damage to tail rotor and gear box, tail rotor drive shaft and tail fairing	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	43 years	
Commander's Flying Experience:	6,000 hours (of which 3,000 were on type) Last 90 days - 18 hours Last 28 days - 8 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and enquiries by the AAIB	

The helicopter had been chartered to carry two passengers, a father and son aged approximately 79 and 50 years respectively, from Cowmire Hall, Crosthwaite, Lancashire to Newbury, Berkshire. The passengers informed the pilot that they had both flown in helicopters before. They also provided the pilot with a detailed map of the landing site.

At 1200 hrs on the 25 December 1994 the helicopter departed Whitechester Farm, its home base, for the positioning flight to Cowmire Hall arriving at 1250 hrs. The weather conditions at the time, observed by the pilot using his GPS as he approached the landing site were, wind 220°/25 kt gusting 30 kt, visibility 8 km in light to moderate rain with overcast cloud at 2,500 feet. The Airmet Area Forecast for the Northern UK region valid for 25 December 1994 from 1100 hrs to 1900 hrs described the meteorological situation as an active cold front moving southeast at 20 kt positioned over the Lake District at 1300 hrs with a strong wind warning of south to southwesterly surface winds gusting up to 35 kt mainly near the front.

The helicopter landed on a heading of about 250° and was positioned some 35 metres from a stile set in a 6 feet high slate wall that formed the boundary between the house lawn and the landing site (see diagram). The son, who was with his father in the house when the helicopter arrived, left his father and went to meet with the pilot. He approached the helicopter but remained clear of the rotor disc. On seeing a 'thumbs up' from the pilot the son approached the helicopter to discuss the details of the flight. He concluded by saying that he would return to the house to fetch his father and that there was some luggage left adjacent to the wall that would need to be loaded in the helicopter.

The pilot reported that his normal procedure on arrival is to shut down the engine, stop the rotors and await the arrival of passengers. On this occasion, however, he was aware the passengers would be ready without delay and therefore it was his intention to vacate the helicopter and leave it with the rotors turning while he met both passengers and briefed them by the wall. He stated that this seemed a reasonable procedure at the time as, after the briefing, he would be able to escort the passengers to the helicopter safely.

The helicopter, which was fitted with high skids, was not fitted with a rotor brake. The pilot reported that his only reason for not shutting down the engine and waiting for the rotors to stop was that it would have taken too long and delayed the departure.

While the son returned to the house the pilot left the helicopter and walked to the wall to collect the luggage. The pilot returned to the helicopter and as he approached the nose of the aircraft he looked for the passengers but they were not in sight. He moved to the rear baggage compartment, on the left side of the helicopter, and stowed the luggage. Whilst he was doing this the father, who had poor eyesight, and son, left the house, crossed the stile and moved towards the helicopter. The son paused briefly to prepare his camera to photograph the occasion. The father, who was carrying a shoulder bag, continued towards the helicopter with his head down, and passed under the tail boom. Moments later he was hit by the tail rotor which threw him to the ground severely injuring his left arm and head. The son looked up from his camera to see his father fall.

The son approached the helicopter and joined the pilot who was already attending to the injured father. By this time one blade of the tail rotor had become detached and the remaining blade had embedded itself in the aircraft structure. Whilst the pilot administered first aid and shut down the helicopter, the son returned to the house to telephone for an ambulance which arrived some thirty five minutes later.

Operations Manual (OM)

The company operations manual contains a section on Safety Precautions. Included in this section are paragraphs concerning engine starting, danger from rotors and a note on when the pilot shall remain at the controls. The relevant portions are reproduced below:

3.1 ***Starting Engine - Fire Prevention and Rotor, Wind, Speed Limits***

When starting the engine, either at base or away from base, the captain shall ensure that whenever possible, a fire extinguisher is available and being manned. Pilots are warned that starting and stopping the main rotor with he wind speed other than on the nose of the helicopter may cause the rotor blades to make contact with the tail boom. The limits are clearly defined in the Aircraft Flight Manual and all pilots must ensure the aircraft is within the defined limits prior to starting the engine.

Although the OM refers to the Aircraft Flight Manual for wind speed limits, the Bell 206B Aircraft Flight Manual does not specify any wind limits for the starting or stopping of the rotor blades.

3.3.3 ***Safety Precautions - Danger from Rotors***

The captain shall do his utmost to ensure the safety at all times of the passengers, ground crew and other persons in the vicinity of the take-off and landing area: the following points should be used as a guide:

(a) Do not accept a landing unless there is evidence that adequate arrangements exist for the safety of persons on the ground.

(b) If the ground is not level or the wind is gusting, stop the rotors before permitting passengers to embark or disembark.

(c) Ensure that passengers are briefed, whenever possible, to approach or leave the helicopter within an arc 45 degrees either side of the front of the helicopter and then only after having obtained permission of the pilot.....

Section 5.10 of the Operations Manual concerns procedures to be adopted when 'Shutting Down' the helicopter. A note, following that section, states:

Note: The pilot shall remain at the controls at all times when the engine is running, or rotor RPM is above 20%. When rotor RPM is 20% or below, the pilot is permitted to leave the controls for the purpose of securing the main rotor, subject to the controls being locked and the hydraulics switched off. Passengers must remain seated in the aircraft until the rotors are stopped, or disembarked prior to engine shutdown with the aid of a marshaller.

DIAGRAM OF LANDING SITE