

ZK-HIG Accident, Auckland Viaduct Harbour 23 November 2011

Abstract

At approximately 1015 hours New Zealand Daylight Time on 23 November 2011, the pilot of ZK-HIG, an Aerospatiale AS350B2 helicopter, was engaged in a lifting operation at the Auckland Viaduct Harbour. The objective of the operation was to raise the tower of the Auckland Christmas tree from the ground into a vertical position, to allow ground personnel to secure the base of the tower.

After the tower was secured the helicopter descended slowly toward the ground. The helicopter then hovered approximately five metres above the ground, adjacent to the tower. While the helicopter was hovering a loud bang was heard and the helicopter fell to the ground with the engine still running. Once the helicopter came to rest the pilot was extracted from the wreckage almost immediately, by ground personnel standing close by.

Factual Information

The helicopter operator was engaged by the rigging contractor for the purpose of erecting the tower for the Auckland Christmas tree located at Auckland's Viaduct Harbour.

The plan was for two lifts to be conducted. The first lift was to raise the tower from the horizontal into the vertical position using an SK75 Spectra lifting line, the tower pivoting on two pins in the base. Then, once in the vertical position, two more pins were to be inserted into the base corners and three temporary cable stays would be applied to hold the tower in place. The lifting line would then be released from the helicopter's hook. The second lift would follow to position the 'star' ornament onto the top of the tower.

The first lift proceeded well, until it came time to release the lifting line from the helicopter's hook. The pilot then descended the helicopter toward the ground. The pilot was in radio communication with the rigging supervisor who was standing underneath the helicopter and his spotter.

When the helicopter hovered at approximately five metres above the ground, the rigging supervisor was seen to jump up and grab the lifting line which was sagging below the helicopter.

The act of pulling downwards on the lifting line to release it from the helicopter's hook instantly tightened the lifting line, which was still attached to the top of the adjacent tower, and the lifting line came into contact with the main rotor blades. The force of the impact of the main rotor blades on the lifting line caused massive out of balance forces within the helicopter's rotating components, which resulted in the loss of the structural integrity of the helicopter whilst in flight. The helicopter then fell to the ground. All parties managed to escape without injury.

Injuries to persons

The accident did not result in any appreciable physical injury to any person.

Weather conditions

On the day, the wind was predominantly 10 to 15 knots from the North with good visibility.

Wreckage and impact information

The main rotor blades exhibited signs of significant impact with the hard surface of the pavement. The three arms on the main rotor 'starflex' were sheared by the impact forces. The main rotor transmission and the tail boom had separated from the helicopter. The fuselage of the helicopter had come to rest close to the Christmas tree tower, facing in the opposite direction to that which it was facing at the time of the main rotor blade impact with the lifting line. The pilot's seat had separated from the helicopter during the accident sequence.

Contributing Factors

The safety investigation revealed that the SK75 Spectra lifting line did not release normally from the helicopter's hook when commanded, after the tower lift. This was primarily due to the attachment of the lifting line fixed loop directly to the hook, instead of using a shackle and chain arrangement between the lifting line and the hook.

While a separate CAA Health and Safety investigation was conducted, there were no additional contributory factors found during the CAA Flight Safety Investigation into the areas highlighted within the preliminary report other than those stated above under Contributing Factors.

CAA accident investigations are conducted in accordance with ICAO guidelines. The sole objective of such investigations is the prevention of accidents by determining the contributing factors or causes and then implementing appropriate preventive measures - in other words restoring safety margins to provide an acceptable level of risk.

The focus of CAA safety investigations is to establish the causes of the accident on the balance of probability. Accident investigations do not always identify one dominant or 'proximate' cause. Often, an aviation accident is the last event in a chain of several events or factors, each of which may contribute to a greater or lesser degree, to the final outcome.

*The sole objective of the investigation of an accident or incident shall be the **prevention** of accidents and incidents. It is **not** the purpose of this activity to **apportion blame or liability**.*