

Loss of Engine Power and Ditching

Liberty Helicopters Inc. Operating a FlyNYON Doors-Off Flight

New York, New York
March 11, 2018

ERA18MA099

This two-dimensional animated reconstruction shows the sequence of events in the accident, which occurred on March 11, 2018, about 1908 eastern daylight time. The doors-off helicopter flight over New York City was operated by Liberty Helicopters Inc. per a contractual agreement with NYONair. The vehicle involved was an Airbus Helicopters AS350 B2 equipped with an emergency flotation system. The helicopter lost engine power and the pilot executed an autorotative descent and ditching on the East River. After touchdown, the helicopter rolled inverted and submerged.

The sequence of events was reconstructed based on information from radar data, aircraft performance data, two cell phone videos taken by witnesses and a GoPro camera mounted inside the helicopter.

A sequence of graphics is used to provide an overview of the accident and indicate the helicopter's position as time advanced. Still images are followed by a continuous animation of the accident helicopter to the time of the ditching on the East River. The animation does not depict the weather or visibility conditions. The animation ends with two simultaneous video clips showing the helicopter touching down on the East River and then rolling inverted. The animation includes audio narration.

The animation begins with a picture of the accident aircraft, an Airbus Helicopters AS350 B2, being flown with the doors off. Next, two side-by-side photographs show front and back views of an exemplar full-body, fall-protection harness; each passenger wore a fall-protection harness to keep them from falling out of the helicopter when taking photographs with their feet extending out the open doorways.

An overall map of the area shows the origin of the flight at Helo Kearny Heliport, Kearny, New Jersey to the accident location of the East River. A moving two-dimensional graphic model of the helicopter depicts the initial part of the flight, which passed the Statue of Liberty and proceeded to the East River. The motion of the graphic model of the helicopter follows the recorded ground track of the flight, with a white line tracing the ground track.

A graphical sketch of the inside of the helicopter illustrates the seating arrangement and position changes of the pilot and 5 passengers; the pilot was seated on the right and one passenger was in the left front seat, with the other four passengers in the back seat. Photographs indicate the three floor-mounted engine control levers located between two front seats, including the fuel flow control lever and the fuel shutoff lever.

The map view changes to a focused view concentrating on the last 2 minutes of the flight, when the helicopter lost engine power, and the pilot executed an autorotative descent and ditching on the East River. The left side of the screen shows the position of the helicopter in a continuous real-time animation. The locations where the helicopter began to lose altitude and where the emergency flotation system was deployed are indicated on the ground track. The floats are indicated as yellow squares on each side of the graphic model of the helicopter. The helicopter's altitude and airspeed are indicated at the bottom of the frame, along with the local time. Altitude and airspeed data end when the helicopter is below 100 feet above ground level.

Photographs on the right side of the screen from an exemplar helicopter illustrate the sequence of events whereby the tail of the tether attached to the fall-protection harness on the front seat passenger pulled the fuel shutoff lever into the up (or off) position, which would stopped fuel flow to the engine. Another photograph illustrates how the pilot reset the fuel shutoff lever to the down (or on) position, but at too low an altitude to have time to restart the engine.

The animation transitions to two simultaneous cell phone videos taken by witnesses as the helicopter ditches on the East River and rolls inverted.

Narration

1. On March 11, 2018, about 1908 eastern daylight time, an Airbus Helicopters AS350 B2, operated by Liberty Helicopters Inc. per a contractual agreement with NYONair lost engine power during a doors-off flight over New York City. The pilot performed an autorotative descent and ditching on the East River, and the helicopter rolled inverted. Both Liberty and NYONair considered the flight to be an aerial photography flight.
2. Before departure for the flight, each passenger was restrained by a full-body, fall-protection harness in addition to the helicopter's installed, FAA-approved restraints. The harness was connected to the helicopter by a tether; the harness/tether system was intended to keep the passengers from falling out of the helicopter when taking photographs while extending their feet outside the helicopter's open doorways.
3. About 1850, the accident helicopter departed Helo Kearny Heliport, Kearny, New Jersey, with the pilot and 5 passengers on board for the intended thirty-minute local flight.
4. The flight traveled toward the statue of Liberty, at altitudes between 300 and 500 feet above ground level, then flew near the statue and other landmarks before proceeding north up the East River.
5. The pilot radioed the air traffic control tower at LaGuardia Airport, and requested a route up the East River to the north end of Central Park.
6. The air traffic controller provided a clearance to proceed with instructions for the flight to remain at or below an altitude of 2000 feet above mean sea level.
7. Radar data showed that the helicopter then proceeded along the East River and climbed to an altitude of 1900 feet above mean sea level.

8. The pilot was seated on the right, one passenger was in the left front seat and 4 passengers were in the back seats.
9. Three floor mounted engine control levers were located between the two front seats.
10. Two of these controls were the fuel flow control lever and the fuel shutoff lever.
11. As the flight proceeded, the front passenger rotated outboard in his seat, extended his feet outside the helicopter, and leaned back several times to take photographs.
12. Onboard video indicated that, each time that the front passenger leaned back, the tail from the tether attached to the back of his harness hung down in the vicinity of the helicopter's floor mounted engine controls.
13. At 1905:51, the front seat passenger resumed a more upright seated position, and the tail of his tether appeared to be taut and extended toward the area of the helicopter's floor mounted controls.
14. The front seat passenger then pulled on the door frame hand grip to adjust his seating position. His tether tail remained taut but appeared to pop upward as a unit.
15. The onboard video recording captured a reduction in ambient engine sounds about 2 seconds later. The helicopter began to lose altitude.
16. The pilot said he heard the low rotor rpm alert and saw the engine oil pressure and fuel pressure lights illuminate.
17. About 1906:30, the pilot turned toward the East River and attempted to restart the engine but was unsuccessful.
18. The pilot then made a "Mayday" radio transmission.
19. Preparing for the emergency landing, the pilot found that the fuel shutoff lever was in the up (or shutoff) position. The pilot realized that the front passenger's tether tail had pulled the lever up, shutting off the fuel flow to the engine.
20. The pilot pushed the fuel shutoff lever down to restore fuel flow, but the helicopter was too low for the pilot to restart the engine.
21. The pilot activated the emergency floatation systems about 100 feet above the water.
22. The helicopter touched down about 1907:15. The helicopter then rolled over to the right and was inverted and submerged about 11 seconds after touchdown.
23. Only the pilot was able to exit from the helicopter.