COUGAR HELICOPTER CRASH

On March 12, 2009, Cougar Flight 91 was carrying workers from St. John's Airport over the Atlantic, 315 kilometres to the giant *Hibernia* drilling platform and the Sea Rose production vessel some kilometres further. The big Sikorsky S-92A helicopter had sixteen passengers and two pilots.

At 9:40 a.m., a mayday call was heard. Pilot Matthew Davis radioed that his instruments warned of "zero oil pressure" in the main engine gearbox, where engine power is transferred to the rotors. Zero oil pressure usually means the oil inside has leaked out and the gearbox could overheat and fail. If the gearbox fails, the helicopter cannot fly.

Remarkably, helicopters are able to glide to earth safely even without engine power. Pilots call this glide "autorotation." In autorotation, the pilot tilts the helicopter nose downward as the aircraft falls. The rotors spin freely as the air passes through them, like a maple key spins as it comes to Earth. Near the ground, the helicopter is "flared," with its nose raised upward while the rotor blades are angled

to give maximum lift. In most cases the helicopter lands gently.

Davis knew he had to return to St. John's. He reversed his heading, reduced speed and descended to 240 metres above the ocean. He hoped they had enough time to return to the airport. Both pilots assumed that before the main gearbox overheated and failed, they would notice unusual smells, vibration or noises. But so far the gearbox and engine seemed to operate normally.

Still, the pilots prepared for the worst. Land was a long way off. Below them, the ocean was rough and stormy. Search and rescue craft were called to stand by. The passengers were told to put on survival suits and were reminded of safety procedures.

Without warning, the gears driving the tail rotor broke apart, causing the helicopter to veer to the right. Davis cut power and began the autorotation procedure. Unfortunately, the helicopter was too high and travelling too fast for a smooth autorotation descent. The main rotor turned too slowly for proper autorotation, and the big helicopter hit the ocean surface hard.

The collision caused serious damage to the helicopter and injured the passengers inside. The flotation tanks, which should have kept the craft afloat, were damaged and did not inflate. Very soon after hitting the water, the helicopter turned on its side and began to sink. It was still about fifty kilometres from the Newfoundland coast.

Robert Decker was the only survivor. Despite swallowing seawater, suffering the pain of a broken sternum and the sudden shock of the icy water, Decker managed to escape the helicopter. "The helicopter was sinking quickly, port [left] side down. It was instantly filled with water . . . The next thing I did was reach for my seatbelt and I pulled myself out through the window. I didn't know how deep the helicopter was at that time. I didn't know what was happening. I had my hands above my head and I could look up and I could see it was getting brighter and brighter and I guess eventually my arms broke the surface."

Patrol aircraft soon spotted Decker, floating debris and another body. The helicopter was gone. Decker was rescued after eighty minutes in the water. His body temperature was dangerously low because his face and hands were exposed. He hadn't managed to put on the gloves and the hood of his survival suit and the suit had taken in some water. Just one other person, Allison Maher, had managed to escape the helicopter, but was lifeless when she was found. The bodies of the pilots and other passengers were recovered from the helicopter days later as it was raised from 178 metres of water.

Transportation Safety Board investigators found the helicopter gearbox oil had leaked out when metal studs on a cover broke. The helicopter flew for only twelve minutes after the gearbox ran dry. This surprised many people because helicopters operating over the ocean were thought

to be able to fly for at least thirty minutes in such an emergency.

The investigators recommended important changes to helicopters and the way they are maintained. They also suggested helicopters never fly over seas too rough for their flotation devices and that survival suits be made safer.

The many benefits from the oil industry have made Newfoundland rich. But the human tragedies like this are too costly to be repeated.