

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**AVIATION INVESTIGATION REPORT
A07A0118**



IN-FLIGHT COLLISION BETWEEN TWO HELICOPTERS

**NEWFOUNDLAND HELICOPTERS LTD.
BELL 206L LONG RANGER, C-GCHA
AND
UNIVERSAL HELICOPTERS NEWFOUNDLAND LTD.
EUROCOPTER AS 350 BA ASTAR, C-FHHH
POSTVILLE, NEWFOUNDLAND AND LABRADOR
03 OCTOBER 2007**

Canada

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

Aviation Investigation Report

In-flight Collision between two Helicopters

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Bell 206L Long Ranger, C-GCHA
and

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Eurocopter AS 350 BA Astar, C-FHHH
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Summary

The Newfoundland Helicopters Ltd. Bell 206 Long Ranger (registration C-GCHA, serial number 45121) was taking off from a fuel-staging area south of Postville, Newfoundland and Labrador, at 1000 Atlantic daylight time. At the same time, a Universal Helicopters Newfoundland Ltd. Eurocopter AS 350 BA Astar (registration C-FHHH, serial number 1421) was on approach to land at the same fuel-staging area. The Astar was carrying a sling load on a longline. During departure, the Bell 206L collided with the longline, causing the Bell 206L to break up in flight and crash near the shore of Kaipokok Bay, on the southern edge of Postville. The pilot, the sole occupant on board the Bell 206L, was fatally injured and the helicopter was destroyed. The pilot of the Astar maintained control of the helicopter and landed safely at the Postville airport; he was not injured and the Astar sustained substantial damage.

Ce rapport est également disponible en français.

Other Factual Information

The Newfoundland Helicopters Ltd. Bell 206L was under contract to Bayswater Uranium Corporation (Bayswater), which was engaged in the exploration of uranium in the Postville, Newfoundland and Labrador (NL) area. The Universal Helicopters Newfoundland Ltd. AS 350 BA Astar was under contract to Aurora Energy Resources (Aurora), also engaged in the exploration of uranium in the Postville area. Both helicopter companies were operating in accordance with operations certificates issued under subparts 702 and 703 of the *Canadian Aviation Regulations* (CARs) and were contracted to support drill site needs such as crew shift changes, drill site supplies, and drill moves.

The Bell 206L was manufactured in 1977. Records indicate that it was operated and maintained by Newfoundland Helicopters Ltd. in accordance with existing regulations and approved maintenance organization (AMO) procedures. All mandatory airworthiness directives and required maintenance had been completed.

The Eurocopter AS 350 BA Astar was manufactured in 1981. Records indicate that it was operated and maintained by Universal Helicopters Newfoundland Ltd in accordance with existing regulations and approved AMO procedures. All mandatory airworthiness directives and required maintenance had been completed.

Both the Bell 206L and the Astar weights and centres of gravity were within the prescribed limits. There were no technical difficulties associated with either aircraft. Due to the post-impact fire damage, it was not possible to confirm the normal functioning of the Bell 206L VHF or FM radios.

Both helicopter pilots were certified and qualified for flight in accordance with existing regulations. The Bell 206L pilot had approximately 11 500 hours total flying time acquired on different helicopter types, including the Bell 206L. He had vast experience flying helicopters throughout Canada and abroad. The Astar pilot had approximately 1800 hours total flying time, with approximately 200 hours on the Eurocopter AS 350 Astar. Both pilots had flown in the Postville area before and were familiar with the helicopter activity levels in the fuel-staging area and with the established communications protocol.

The town of Postville, located along the waters of Kaipokok Bay, is in Class G uncontrolled airspace. Pilots operating at 3200 feet above sea level or below within a five nautical mile (nm) radius of the uncontrolled Postville Airport should report their intentions on 122.8 megahertz (MHz), the published aerodrome traffic frequency (ATF), so as to avoid conflict with other aircraft operating in the area.

The fuel-staging area is located approximately 0.5 nm south of the Postville Airport, within the airport traffic zone. Within uncontrolled airspace, pilots have sole responsibility for seeing and avoiding other aircraft. Pilots arriving and departing normally report their intentions inbound, on final approach, on take-off, and outbound. This practice assures that pilots operating in the vicinity of the Postville airport and those operating in and out of the fuel-staging area are aware of one another.

The pilots under contract with Aurora or Bayswater also use FM radios to communicate with their respective exploration company's dispatch and drill operations on the ground. Radio communications on the Postville 122.8 MHz ATF are not recorded. It was not possible to confirm the nature of the broadcasts that took place prior to the occurrence. Neither the Bell 206L nor the Astar were equipped with a flight data recorder or a cockpit voice recorder. The occurrence operators were not required to have their aircraft equipped with these recorders.

The fuel-staging area is a flat, gravel-surfaced area bordered by trees to the west, the town's supply of diesel fuel tanks and an access road to the east, low-lying brush to the north and the waters of Kaipokok Bay to the south (see Appendix A - Photograph of Accident Area). The helicopter landing area is approximately 100 feet by 55 feet and is about 40 feet above the shoreline. Helicopters using the fuel-staging area land south of the fuel tanks facing towards the north, with the tail booms overhanging the embankment between the landing area and the shore. There is room to land and manoeuvre three to four helicopters at one time. All tanks are on the north side of the fuel-staging area. Aircraft normally approach and depart upwind; winds are generally westerly and most departures out of the fuel-staging area are to the west.

On the day of the occurrence, the Astar helicopter pilot, based at a drill camp 13 miles south of Postville, executed several drill site related trips in the morning. Weather conditions in the Postville area were appropriate for visual flight rules. It was a partly cloudy day with no precipitation and good visibility in-flight and on the ground. Winds were westerly at 5 to 10 knots. Approximately seven nm to the southeast of Postville, the Astar pilot made a position report on 122.8 MHz. A company pilot departing the Postville area responded and confirmed their flight paths would not conflict. The Astar pilot made another position report when he was approximately three nm to the south-east on a direct approach to the Postville fuelling area. He received no reply to this position report but was heard by another pilot working four nm to the west. At the time, the helicopter was carrying an empty red Tidy tank on a 90-foot longline sling. These tanks are flown into the Postville fuel-staging area to be refilled and then flown back to the various drill sites.

The Astar pilot noticed a Bell 206L helicopter on the ground with the main rotors turning. The Astar passed approximately 100 feet behind and to the left side of the Bell 206L at an altitude of approximately 150 feet above ground level (agl) to deposit the Tidy tank in front of the diesel fuel supply tanks. At that time, the Bell 206L lifted off and made an immediate left climbing turn toward the Astar. The Astar pilot did not hear a broadcast from the Bell 206L pilot announcing his intentions to take off from the fuel-staging area. The Astar pilot's attention on short final was on the sling load below, and he did not know that the Bell 206L had taken off until it appeared in his floor sling window. The Astar pilot pulled the collective in an attempt to climb; however, one of the Bell 206L main rotor blades contacted the sling load attachment cables three inches below the two shackles.

Control of the Astar helicopter was affected when the Bell 206L collided with the sling load. The four cargo hook swing-attachment cables attached to the underside of the fuselage failed in overload. The two forward cables failed first, which caused the cargo hook manual release cable to stretch aft, allowing the cargo hook to release the longline just as the two aft cables failed. The

Astar pilot was able to regain control of the helicopter and broadcast a mayday call on the VHF frequency. He landed safely at the Postville airport about one-half mile to the north. The pilot was not injured. The aft fuel tank support of the Astar sustained substantial damage.

The Bell 206L was based at the Postville airport for the duration of the contract where the pilot would normally station the helicopter overnight and refuel from 45-gallon drums of fuel. On occasion, the pilot would refuel at the fuel-staging area when the level of other helicopter activity was low. He would then return to station his aircraft at the airport while waiting for any other deployments.

On the morning of 03 October 2007, the Bell 206L pilot flew drill crews to various drill sites and returned to Postville to refuel the helicopter at the fuel-staging area, parking in the area equivalent to centre stage. Because he was scheduled to pick the drill crews up at the end of the day, it is believed that when taking off from the fuel-staging area at approximately 1000 Atlantic daylight time,¹ he was flying to the Postville Airport. Another Astar was parked to the right side of the Bell 206L. It was not running at the time of the occurrence and no one was on board. The distance between the Bell 206L and the parked Astar was sufficient for the Bell 206L to execute a pedal turn without fear of striking the tail rotor. The fuel-staging area was not congested at the time of the take-off and the Bell 206L pilot's schedule did not indicate that he was pressed for time.

After the collision, the Bell 206L fuselage continued on a south-westerly trajectory, 260 feet from the departure point. It fell from an estimated altitude of 100 feet above the surface of the water and came to rest a few yards from the shoreline, in three feet of water, on a heading of 240 degrees magnetic. The tail boom and the main rotor assembly were located to the north of the fuselage at approximately 30 feet and 70 feet respectively. The Tidy tank was located halfway down the embankment (see Appendix A - Photograph of Accident Area). The post-impact fire consumed 70 per cent of the aircraft, including the emergency locator transmitter.

Emergency services were called immediately after the occurrence and the local fire department was on site within five minutes of the call. The post-impact fire was extinguished. The Royal Canadian Mounted Police and a Canadian Forces Search and Rescue crew were called upon to take charge of the site. The fuel-staging area was closed following the occurrence.

The front right seat in a Bell 206L is the pilot control position. The doors, window frames, and the centre control column partition limit the view to the left and to the aft of the aircraft. The cockpit ceiling windows are directly above the pilot seat and the front left passenger seat. The view upward and aft through these windows is obstructed by the upper deck transmission cowling. These blind spots would have limited the pilot's ability to see traffic approaching from above, behind, and from the left of the aircraft. The longline used to sling the red Tidy tank was a 90-foot, half-inch thick, grey steel cable. This cable would not have contrasted well against the partly cloudy sky. The Tidy tank would have been highly visible; however, at 50 feet agl it would not have been in the pilot's immediate line of sight if he had looked to the left of his aircraft prior to take-off.

¹ All times are Atlantic daylight time (Coordinated Universal Time minus three hours).

It is a common practice amongst helicopter pilots to execute a hover turn to the left (safety check) to confirm that no traffic is coming from behind and from the left prior to departure. The Bell 206L executed an immediate climbing turn to the left after lift-off, with no opportunity to see the Astar and/or the Tidy tank in his intended flight path. The Bell 206L's engine noise would have masked the sound of the Astar approaching.

It was common practice for the pilots operating C-GCHA to power the radios in the latter part of the pre-take-off checks prior to take-off. The aircraft may have been operating for several minutes prior to the pilot donning his headset and/or powering the radios.

The level of air traffic activity in the Postville area is high during the period from June to November. Users of the fuel-staging area believed that during this high-traffic period, there was an increased risk of collision in the fuel-staging area. To mitigate the possible risks associated with this high-traffic area, the helicopter operators, exploration companies, and the Postville town council had agreed to divide the helicopter traffic into two separate fuel-staging areas. Permits to relocate some of the fuel tanks were requested but at the time of the occurrence they had not yet been obtained. A risk of collision was considered possible if radio communication was not adequate and/or if pilots did not keep a good visual lookout for traffic. The current radio reporting procedures were considered to be satisfactory by flight crews operating in the area.

CAR 602.101 contains the mandatory radio communication procedures applicable to any uncontrolled airport lying within a mandatory frequency (MF) area ². These regulations must be followed when operating within an MF area, but are not mandatory within an ATF area. For the benefit of safety, it is highly recommended that the radio reporting procedures stated in CAR 602.101 be followed when operating within an ATF area to reduce the likelihood of a traffic conflict. Paying close attention to radio communications helps pilots form a mental image of local traffic and reduces the risk of collision.

CAR 602.19 contains the regulations applicable to right-of-way:

- Subsection (1) Notwithstanding any other provision of this section, a) "the pilot-in-command of an aircraft that has the right-of-way shall, if there is any risk of collision, take such action as is necessary to avoid a collision."
- Subsection (7) specifies that "Where an aircraft is in flight or manoeuvring on the surface, the pilot-in-command of the aircraft shall give way to an aircraft that is landing or about to land."
- Subsection (9) specifies: "The pilot-in-command of an aircraft at a lower altitude, as described in subsection (8), shall not overtake or cut in front of an aircraft at a higher altitude that is in the final stages of an approach to land."

² MF area means an area in the vicinity of an uncontrolled aerodrome for which a mandatory frequency has been designated. The area is defined in the COMM section of the Canada Flight Supplement for a particular aerodrome. MF procedures apply within the designated MF area.

- Section (10) specifies: “No person shall conduct or attempt to conduct a take-off or landing in an aircraft until there is no apparent risk of collision with any aircraft, person, vessel, vehicle, or structure in the take-off or landing path.”

CAR 602.21 deals with collision avoidance and simply states that no person shall operate an aircraft in such proximity to another aircraft as to create a risk of collision.

CAR 602.96 deals with operations at or in the vicinity of an aerodrome.

- Subsection (2) specifies: “Before taking off from, landing at or otherwise operating an aircraft at an aerodrome, the pilot-in-command of the aircraft shall be satisfied that:
 - (a) There is no likelihood of collision with another aircraft or a vehicle.”

Analysis

The key to flight safety in the vicinity of uncontrolled airports is good radio communication and visual alertness. It is highly recommended that aircraft operating within an aerodrome traffic frequency (ATF) area follow the mandatory radio reporting procedures outlined in the *Canadian Aviation Regulations* for operations within a mandatory frequency area. Use of these procedures is at the discretion of the aircraft operators while operating in an ATF. Pilots have sole responsibility for seeing and avoiding other aircraft.

No broadcast was heard stating the Bell 206L pilot’s intention to take off from the fuel-staging area. Had the Astar pilot known the Bell 206L was intending to take off, he could have possibly taken action in time to avoid a collision.

While positioned on the ground facing the fuel tanks, the Bell 206L pilot seated on the right side of the aircraft would have had difficulty seeing the Astar and/or the Tidy tank approaching from above, behind, and to the left. A hover turn to the left prior to departure would have allowed the pilot to see the Astar and its sling load on approach. The reason for not executing this safety check to confirm that his intended flight path was clear of traffic is not known.

Although the Astar pilot made two position reports, it is probable that these broadcasts were not heard by the Bell 206L pilot. It is possible that the Bell 206L pilot had not yet donned his headset and/or that he had not yet powered the radios at the time the Astar pilot made his reports. The Astar pilot did not broadcast his aircraft’s position closer in on final approach or on short final to the fuel-staging area. Despite the fact that the Astar pilot saw the Bell 206L rotors turning and because the Bell 206L pilot had not broadcast his intentions to take off, the Astar pilot assumed he was not ready to do so or that he was shutting down. Also, the fact that the Bell 206L pilot had not responded to the Astar pilot’s position report when he was three nautical miles inbound would have indicated to the Astar pilot that the Bell 206L would not be a conflict.

Longline operations require a significant amount of attention from pilots, especially when flying in the vicinity of other objects and/or close to the ground. On short final, just prior to the collision, the Astar pilot's attention was on his sling load. He did not see the Bell 206L take off. Once he saw the Bell 206L appear in his floor sling window, he attempted a rapid climb. However, this evasive action was not successful in preventing the collision.

Although a potential risk had been identified with the high level of traffic using the fuel-staging area, the radio reporting procedures were considered satisfactory by the various flight crews operating in the area. Prior to the occurrence, plans to move several fuel tanks to a different location had been discussed. The fuel-staging area was not congested at the time of the occurrence and traffic volume in the area was not considered to have contributed to the event.

Findings as to Causes and Contributing Factors

1. No broadcast was heard stating the Bell 206L pilot's intention to take off and the Astar pilot was not aware that the Bell 206L was about to take off.
2. Although not mandatory to do so, the Bell 206L pilot did not execute a left hover turn prior to taking off to ensure there was no traffic or obstacles in his intended departure path. Without this safety check prior to take-off, the Bell 206L pilot could not see the Astar and its sling load coming from behind and from the left.
3. Although not mandatory, the Astar pilot did not broadcast his position on final approach or on short final.
4. It is likely that the Bell 206L pilot had not yet donned his headset and/or had not yet powered the radios and therefore did not hear either of the Astar pilot's previous position reports.

Finding as to Risk

1. Uncontrolled airports pose an additional risk for users and although it is good airmanship to communicate on the published aerodrome traffic frequency, it is not mandatory by regulation to do so.

Safety Action Taken

Prior to this occurrence, the helicopter operators, the exploration companies, and the Postville town council had agreed to relocate several of the fuel tanks in order to alleviate the amount of traffic using the fuel-staging area. These plans were awaiting the appropriate permits. Since the occurrence, a new fuel-staging area has been prepared.

Universal Helicopters briefed all of its crews working in the Postville area to increase the frequency of their position reports, to call short final and to also call before departure.

Furthermore, Universal Helicopters intends to issue a memorandum and further brief its staff on the above-mentioned procedures before seasonal activity resumes.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 22 July 2008.

Appendix A – Photograph of Accident Area

