



TSB Recommendation A24-04

Enhanced risk mitigation for reduced-visibility operations in uncontrolled airspace

The Transportation Safety Board of Canada recommends that the Department of Transport enhance the requirements for helicopter operators that conduct reduced-visibility operations in uncontrolled airspace to ensure that pilots have an acceptable level of protection against inadvertent flight into instrument meteorological conditions accidents.

Air transportation safety investigation report	A21C0038
Date the recommendation was issued	15 February 2024
Date of the latest response	May 2024
Date of the latest assessment	August 2024
Rating of the latest response	Satisfactory Intent
File status	Active

All responses are those of the stakeholders to the TSB in written communications and are reproduced in full. The TSB corrects typographical errors and accessibility issues in the material it reproduces without indication but uses brackets [] to show other changes or to show that part of the response was omitted because it was not pertinent.

Summary of the occurrence

At approximately 1548 Central Daylight Time on 25 April 2021, the Great Slave Helicopters 2018 Ltd. Airbus Helicopters AS350 B2 (registration C-FYDA, serial number 4157) departed from a remote camp on Russell Island, Nunavut, on a day visual flight rules (VFR) flight to Resolute Bay Airport, Nunavut, located 87 nautical miles to the northeast. On board were the pilot, an aircraft maintenance engineer, and a biologist. The purpose of the flight was to return to Resolute Bay following 12 days spent conducting polar bear research for a client, given that poor weather was forecast in the area for the next several days.

At approximately 1633 Central Daylight Time, the helicopter impacted the snow-covered terrain on Griffith Island, Nunavut, approximately 12 nautical miles southwest of Resolute Bay Airport, on a near-reciprocal track to the intended route. The helicopter was destroyed, and a

post-impact fire consumed much of the fuselage area. The emergency locator transmitter was destroyed during the impact sequence and did not transmit a distress signal. There were no survivors.

In addition to the circumstances that most likely led to the collision with terrain resulting from a loss of visual references in flat light and whiteout conditions, the investigation examined the factors that likely influenced the pilot’s decision-making process, the organizational defences in place at Great Slave Helicopters 2018 Ltd., and the regulatory environment.

The Board concluded its investigation and released report A21C0038 on 15 February 2024.

Rationale for the recommendation

In Canada, many VFR helicopter and airplane operators are approved by Transport Canada (TC) to conduct reduced-visibility operations in uncontrolled airspace. The approval, granted as an operations specification, outlines requirements that operators must meet to carry out reduced-visibility operations in uncontrolled airspace. Some of these requirements are the same for helicopters and airplanes; however, there are also some notable differences when considering visibility limit, aircraft equipment, and pilot training (Table 1).

Table 1. Different requirements between airplanes and helicopters for operating in reduced visibility

Requirement	Airplane	Helicopter
Reduced day VFR visibility limit, uncontrolled airspace, operating at less than 1000 feet AGL	1 SM	½ SM
Equipment required for flight in reduced day VFR visibility	Artificial horizon Direction gyro or gyro compass GPS	Nil
Instrument flight training required for flight in reduced day VFR visibility	One hour initial flight training and one hour annual recurrent flight training in basic instrument flying manoeuvres and flight at reduced airspeed.	Nil

These differences mean that helicopters may be operated at half the visibility applicable to airplanes, without the added benefits of the defences required for airplane operations to recover from a loss of visual references. This is likely contributing to a perception identified during this investigation whereby some VFR helicopter operators believe that instrument flight training and basic instrumentation are not needed by VFR helicopter pilots. As a result, some VFR helicopter operators have adopted an “avoid-at-all costs” approach to inadvertent flight into instrument meteorological conditions (IIMC) accidents, that does not consider the possibility that a pilot may need to recover from an IIMC encounter.

This may partially explain why TSB statistics show that helicopter accidents are more than twice as likely to involve a loss of visual reference than are airplane accidents.¹ The current regulations authorize VFR helicopter pilots to operate in flight visibilities as low as ½ SM without instrument flight training or basic instruments. This flight regime leaves little margin for error and time to react if there is a further reduction in visibility.

The Board believes that additional defences must be implemented for those VFR helicopter operations that are approved to operate in reduced visibilities, where the risk of an IIMC accident is even greater because of the reduced safety margins associated with operating at lower visibilities and, typically, lower altitudes. To offset the increased risk, the operations specification for airplanes includes defences specifically intended to assist a pilot in the recovery from IIMC. However, helicopter pilots approved for reduced-visibility operations in uncontrolled airspace are permitted to operate in lower visibility than airplanes and yet are expected to rely solely on their ability to avoid IIMC. This means that helicopter pilots may be unprepared should their attempts at avoiding IMC prove ineffective.

If regulations continue to allow commercial helicopter operators with the applicable operations specification to conduct reduced-visibility operations in uncontrolled airspace at lower visibility, and with significantly fewer defences, than commercial airplane operators, these helicopter operators will continue to be at a greater risk of collision as a result of lost visual references.

Therefore, the Board recommended that

The Department of Transport enhance the requirements for helicopter operators that conduct reduced-visibility operations in uncontrolled airspace to ensure that pilots have an acceptable level of protection against inadvertent flight into instrument meteorological conditions accidents.

TSB Recommendation A24-04

Previous responses and assessments

N/A

Latest response and assessment

May 2024: response from Transport Canada

Transport Canada (TC) agrees with the Transportation Safety Board (TSB)'s recommendation, emphasizing the need to fortify requirements for helicopter operators conducting reduced-visibility operations in uncontrolled airspace, thereby ensuring pilots are equipped with adequate safeguards against inadvertent flight into instrument meteorological conditions accidents.

¹ See Section 1.18.5.4 Reduced-visibility limits for visual flight rules operations in uncontrolled airspace of the report.

TC will assess low visibility approval standards, to align them more closely with fixed-wing standards. This review will encompass fixed-wing operations to identify areas for potential enhancement. TC aims to complete this assessment by the end of 2024 with the capacity to provide further timelines and accomplished tasks in a future update to the TSB.

In the meantime, in 2023, TC published Notice of Proposed Amendment (NPA) 2023-005 - *Minimum Visual Meteorological Conditions for VFR flight in Controlled and Uncontrolled Airspace – Parts I, IV, VI, VII of the CARs and Associated Standards*² for consultation on the Canada Aviation Regulation Advisory Council (CARAC). The purpose of this NPA is to amend Sections 602.114 and 602.115, along with other areas in Parts I, IV, VI, VII of the CARs and associated Standards to facilitate the introduction of Night Vision Imaging Systems (NVIS) and for the increased requirements for Night VFR rating and currency. These changes will include:

- **CAR 605.14** – Increased equipment requirements for helicopters operating in reduced visibility operations in Day VFR to be equipped with the equipment required for night VFR flight under section 605.16 of the CARs.
- **CAR 605.16** – Increased equipment requirement for helicopters operating in reduced visibility operations in Night VFR to require (under subsection 4) use of GPS or Electronic Flight Bags (EFB) peripheral for aircraft. For rotorcraft, a minimum of two axis, SAS (Stability Augmentation Systems) or autopilot capable of returning the helicopter to straight and level flight at the push of one button. Addition of new subsection (5) to require use of NVIS in night VFR flight or by Specific Approval in an approved Night VFR program detailed in the company Standard Operating Procedures.
- **CAR 702.17** – Increased equipment requirements and qualifications for VFR flight in Minimum Flight Visibility - Uncontrolled Airspace to be equipped as per section 605.16 of the CARs.

Due to a reorganization of priorities driving TC's Forward Regulatory Plan³, the amendment is yet to be scheduled for publication in the *Canada Gazette*, Part I. Once the new regulations come into force, TC intends to assist flight schools, general aviation, and commercial operators in adapting to these changes. It is anticipated that these proposed modifications will yield a discernible enhancement in aviation safety, leading to a significant mitigation of accident risks.

² Transport Canada (2023). NPA 2023-005 - Minimum Visual Meteorological Conditions for VFR flight in Controlled and Uncontrolled Airspace – Parts I, IV, VI, VII of the CARs and Associated Standards. Available on the CARAC website at: <https://tc.canada.ca/en/corporate-services/acts-regulations/list-regulations/canadian-aviation-regulations-sor-96-433/canadian-aviation-regulation-advisory-council-carac> (last accessed on 17 June 2024).

³ Transport Canada (2024). *Forward Regulatory Plan*. Available at: <https://tc.canada.ca/en/corporate-services/acts-regulations/forward-regulatory-plan?pedisable=false&wbdisable=true> (last accessed on 17 June 2024).

August 2024: TSB assessment of the response (Satisfactory Intent)

In its response, Transport Canada (TC) indicated that it agrees with the recommendation, acknowledging the need to enhance requirements for helicopter operators conducting reduced-visibility operations in uncontrolled airspace as a safeguard against inadvertent flight into instrument meteorological conditions accidents.

TC also indicated that, by the end of 2024, it plans to assess the standards for reduced-visibility operations and identify ways of enhancing the standards for fixed-wing and helicopter operations. In the meantime, TC is also moving ahead with Notice of Proposed Amendment (NPA) 2023-005: *Minimum Visual Meteorological Conditions for VFR flight in Controlled and Uncontrolled Airspace – Parts I, IV, VI, VII of the CARs and Associated Standards*, which should result in the following notable enhancements being made to the *Canadian Aviation Regulations* requirements for conducting reduced-visibility operations:

- Increased equipment requirements for helicopters operating in day visual flight rules (VFR) conditions;
- Increased equipment requirements for helicopters operating in night VFR conditions; and
- Increased equipment requirements and qualifications for VFR flight in minimum flight visibility - uncontrolled airspace.

Once these changes are incorporated into regulation, TC plans on assisting flight schools, general aviation, and commercial operators in adapting to these changes. Once implemented, these actions will substantially reduce or eliminate the safety deficiency associated with this recommendation. Therefore, the Board considers the response from TC to Recommendation A24-04 to show **Satisfactory Intent**.

File status

The Board will monitor the progress of the regulatory changes proposed by TC and looks forward to TC's next update.

This deficiency file is **Active**.