Transportation Safety Board of Canada
Bureau de la sécurité des transports du Canada

REASSESSMENT OF THE RESPONSE TO AVIATION SAFETY RECOMMENDATION A16-08

Night visual flight rules regulations

Background

On 31 May 2013, at approximately 0011 Eastern Daylight Time, the Sikorsky S-76A helicopter (registration C-GIMY, serial number 760055), operated as Lifeflight 8, departed at night from Runway 06 at the Moosonee Airport, Ontario, on a visual flight rules flight to the Attawapiskat Airport, Ontario, with 2 pilots and 2 paramedics on board. As the helicopter climbed through 300 feet above the ground toward its planned cruising altitude of 1000 feet above sea level, the pilot flying commenced a left-hand turn toward the Attawapiskat Airport, approximately 119 nautical miles to the northwest of the Moosonee Airport. Twenty-three seconds later, the helicopter impacted trees and then struck the ground in an area of dense bush and swampy terrain. The aircraft was destroyed by impact forces and the ensuing post-crash fire. The helicopter's satellite tracking system reported a takeoff message and then went inactive. The search-and-rescue satellite system did not detect a signal from the emergency locator transmitter (ELT). At approximately 0543, a search-and-rescue aircraft located the crash site approximately 1 nautical mile northeast of Runway 06, and deployed search-and-rescue technicians. However, there were no survivors.

The Board concluded its investigation and released report A13H0001 on 15 June 2016.

TSB Recommendation A16-08 (June 2016)

In this occurrence, the pilots took off on a night visual flight rules (VFR) flight in conditions that did not permit them to safely maintain visual reference to the surface. Although the *Canadian Aviation Regulations* (CARs) indicate that night VFR requires a pilot to maintain visual reference to the surface, they do not adequately define the visual references required for compliance. For example, the regulations do not define the cultural/ambient light requirements, nor do they provide for an alternate means of compliance when this cannot be achieved. During the investigation, it was determined that many pilots who conduct night VFR operations believe that it is acceptable to do so at night, regardless of lighting conditions, as long as the reported weather conditions (i.e., ceiling and visibility) meet the minimums specified by regulation. These differences in the ways in which the regulations are being interpreted significantly increase the risk to those who travel on VFR aircraft at night. Further, there is no regulatory requirement, as there is in some countries, for commercial operators to demonstrate to Transport Canada (TC) that their night VFR routes can be reasonably carried out by relying on cultural or ambient lighting, or by alternative means such as night vision goggles (NVG), before they receive TC approval of their night VFR routes.

Night VFR flights are routinely conducted across Canada. In heavily populated areas, it may be easy for pilots to maintain visual reference to the surface using cultural lighting. However, flights are often conducted in remote locations of Canada, where there may be little to no cultural lighting available to help pilots maintain visual reference to the surface without some type of alternative means, such as NVGs. The risks associated with conducting night VFR operations in conditions where pilots are unable to maintain visual reference to the surface are well documented in TSB investigation reports. In a TC study, the regulator identified a number of instances in which flights were conducted under the auspices of night VFR, but with inadequate cues to maintain reference to the surface. Strong evidence therefore exists to suggest that the current night VFR regulations should be re-examined and amended to clearly establish the conditions required to meet the intent of the regulation. For example, in the United States, the *Federal Aviation Regulations* (FARs) state that no person shall operate a helicopter under VFR at night unless that person has "visual surface light reference, sufficient to safely control the helicopter."

Without clearly defined night VFR requirements that establish unaided visual reference/lighting considerations or alternative means of maintaining visual reference to the surface (i.e., night-vision imaging systems), it is highly likely that accidents such as this one will continue to occur:

Therefore, the Board recommended that

> the Department of Transport amend the regulations to clearly define the visual references (including lighting considerations and/or alternate means) required to reduce the risks associated with night visual flight rules flight.
>
> **TSB Recommendation A16-08**

Transport Canada's response to Recommendation A16-08 (September 2016)

> Transport Canada agrees with this recommendation.
>
> TC will address this recommendation in two steps; first with safety promotion and education activities as early as fall 2016; and secondly, by initiating a regulatory amendment project in 2017 including consultation with our key stakeholders. Safety promotion and education will leverage TC's recently published Advisory Circular No. 603-001 — *Use of Night Vision Imaging Systems*.

TSB assessment of Transport Canada's response to Recommendation A16-08 (December 2016)

In its response, TC indicated that it will take a two-fold approach to address this recommendation to reduce the risks associated with night visual flight rules flights. In the short term, TC will conduct safety promotion/education activities, which will be followed in 2017 by a regulatory amendment project. The Board is pleased that TC is taking action to address this safety deficiency.

However, until specific details about the proposed regulatory changes are fully known, the TSB cannot evaluate if these actions will fully address the safety deficiency associated with visual flight rules flights.

Therefore, the response to Recommendation A16-08 is assessed as **Satisfactory Intent**.

Transport Canada's response to Recommendation A16-08 (March 2019)

TC agrees with the recommendation and has created an internal Working Group that is working toward addressing the recommendation.

The first phase of work to address this recommendation involved a pilot project to further evaluate and develop appropriate conditions for the use of Night Vision Imaging Systems for night VFR operations. As a result of the data collected during the pilot project, a new Special Authorization (SA) and associated Advisory Circular (AC) for Night Vision Imaging Systems (NVIS) Operations will replace Ops Spec 603 for NVIS. The AC has been drafted and has been sent out for consultation. A copy of the email and draft AC is attached in Annex 1. TC is currently reviewing the comments received as part of the consultation process. Publication of the AC and availability of the new Special Authorization is being planned for the end of June 2019.

The revised Special Authorization Advisory Circular for Night Vision Imaging Systems requirements for night VFR expands on current definitions and introduces new definitions regarding VFR. The SA introduces language such as "Discernible Horizon" and "Black Hole Effect", and expands the current definition of VFR to include the following wording "*...has sufficient visual cues to see water, terrain and ground objects and provides a discernible horizon where these visual cues allow the flight to operate safely in accordance with CARs Part VI and VII requirements for NVFR*."

Going forward, regulatory development is underway. A separate notice of proposed amendment is anticipated to be released for public consultation in 2019 that will also respond to TSB recommendations.

TSB reassessment of Transport Canada's response to Recommendation A16-08 (May 2019)

To date, the following actions have been taken by Transport Canada (TC) to address the safety deficiency identified in Recommendation A16-08, regarding a clear definition of the visual references required to reduce the risks associated with night visual flight rules (VFR) flight:

- A pilot project was carried out to evaluate and develop appropriate conditions for the use of Night Vision Imaging Systems for night VFR operations; and
- A proposed Special Authorization (SA) and associated Advisory Circular (AC) have been drafted and sent out for consultation. These documents expand on current definitions and introduce new definitions regarding VFR. TC plans on having these documents approved and published by the end of June 2019.

In addition, TC indicated, as it did previously in 2016, that regulatory development is currently underway. In its latest response, TC anticipates that the proposed amendments to the *Canadian Aviation Regulations* will be released for public consultation in 2019.

The Board is encouraged by TC's efforts to address Recommendation A16-08. The SA and AC enhance current definitions and introduce new definitions regarding VFR. However, as the regulatory development is currently underway, no details of the proposed amendments are yet available. Until the regulations are finalized, the Board is unable to determine to what extent these actions will address the safety deficiency identified in Recommendation A16-08.

Therefore, Transport Canada's response to Recommendation A16-08 remains as **Satisfactory Intent**.

Next TSB action

The TSB will continue to monitor the progress of TC's actions to mitigate the risks associated with the safety deficiency identified in Recommendation A16-08, and will reassess the deficiency on an annual basis or when otherwise warranted.

This deficiency file is **Active**.