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July 12, 2021

CARAC
Via email to: CARRAC@tc.gc.ca

Re: Response to Notice of Proposed Amendment (NPA) 2021-007 Minimum Visual Meteorological Conditions (VMC) for Visual Flight Rules (VFR) Flight

INTRODUCTION

The Canadian Owners and Pilots Association (COPA) is the largest Canadian aviation association and the second largest in the world. As the leading voice for the general aviation (GA) flying community nationwide, COPA's mission is to advance, promote and preserve the Canadian freedom to fly. We are proud to represent close to 15,000 members from every province and territory who recognize the need for strong, effective representation resting on our core principles of integrity, commitment, unity and leadership.

COPA has reviewed the subject document in detail and assessed all aspects of this NPA from the perspective of its impact on aviation, most particularly on GA. COPA deems that this NPA will introduce new risks to aviation safety as well as introduce significant costs to this sector of the industry which will impact the Canadian economy at an incredibly vulnerable time.

Our response will address the declared Statement of the Problem and Policy Considerations.
The Statement of the Problem is made with no mention to changing the meaning of VFR flight and wholly focuses on visual conditions at night:

- *The vast geographic expanse of Canada means that most of the country is in areas of insufficient cultural lighting. It is often impossible for pilots to have suitable light to maintain visual reference to the surface to maintain control of their aircraft and to navigate by external visual references. As such, night VFR flying is a combination of day VFR and IFR techniques.*

The Policy Considerations address defining VFR which is outside of the International Civil Aviation Organization's (ICAO) definition, increase in training for night VFR, procedural changes to night VFR, develop a whole new advanced rating system for night VFR which introduces new equipment such as flight displays with Global Positions System (GPS) and SVS (synthetic vision system) which are not included in the proposed changes.

The proposed amendments focused, in large part, on the review of one (of 14) Transportation Safety Board (TSB) report and recommendations.

The NPA failed to include, in its risk assessment, during initial stakeholder Advisory and Consultation (PICA), the most affected group and largest stakeholder group, GA, that represents close to 90% of all Canadian aircraft owners. As a result, Stakeholder impacts were improperly assessed and did not take into consideration the financial impact this would cause to the largest stakeholder group.

This NPA also introduces many other potential revisions to Canadian Air Regulations (CARs) which are not assessed or even addressed and will leave certain proposed policies open ended until such potential changes are addressed in subsequent

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NPAs (with no mention of subsequent PICAs).

COPA has many concerns regarding this NPA and is opposed to its proposed changes, as written. Our recommendations will follow our thorough assessment of the proposed amendments, will actually address the safety concerns and propose practicable mitigations to the aviation safety vulnerability brought forth in the Statement of the Problem.

PRELIMINARY ISSUE CONSULTATIONS ASSESSMENT (PICA)

COPA is concerned that when Transport Canada (TC) sought industry input prior to developing this NPA, general aviation (GA), representing close to 90% of all Canadian aircraft owners, was not consulted.

The PICA phase of the CARAC process, which precedes the NPA, should have included COPA. It is through this process that CARAC members, such as COPA, are asked to comment on the assessment of the issue, including the need for focused technical and safety analysis through the establishment of a focus group.

The Preliminary Issue & Consultation Assessment:

- defines the issue;
- notifies stakeholders of Transport Canada's intent to assess possible
- solutions to address an issue;
- determines the need for a focus group; and
- assists in determining the appropriate consultation stream (low, medium
- or high) with stakeholders.

COPA's input at the PICA phase of this CARAC process would have been instrumental in broadening the scope and offer practicable mitigations to the statement of the problem and Policy Considerations.

TRANSPORTATION SAFETY BOARD (TSB) REPORTS ASSESSMENT

Although several TSB reports were mentioned in the background, this following statement is deemed to be inaccurate:

- *In the past 10 years, there have been 14 relevant TSB accident reports in which issues and concerns with night VFR are cited and where NVIS could have significantly reduced risk or prevented an accident altogether.*

Only one report, the one cited in the NPA, contains a TSB recommendation where NVIS could have significantly reduced risk or prevented an accident altogether. The bias of the NPA towards those who were consulted (only the helicopter sector of the industry, which is very small and distinct and not representative) is obvious.

COPA has done its own review of relevant accidents, of which 11 of the 14 are listed below. In almost every case, the TSB states that pilots found themselves spatially disoriented and unable to recover to VFR or converted to using IFR flying techniques to prevent losing control or flying into the local terrain. These Reports are:

1. A14O0217 – Cessna 150 Collision with Terrain (CFIT) – cross-country flight that got lost and crashed near Algonquin Park
2. A15O0188 – Cessna 182 – Crash shortly after Night Take-Off at Parry Sound. This is a "classic" night VFR blackhole syndrome accident and should have been considered.

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3. A17O0209 – Cessna 150 – Crash over Lake Huron near Goderich airport. This was another "classic" black hole syndrome with possible aircraft split flap but pilots overwhelmed with night and no horizon.
4. A11W0180 – Cessna 185 – Night CFIT. TSB assessed this as another "black hole" situation, spatial disorientation lack of references at night was a key factor.
5. A12C0141 – Lake 250 – Night CFIT at Pickle Lake (CYPL). TSB assessed this as yet another and earlier example spatial disorientation and the "black hole" phenomena.
6. A13H001 – S-76A Ornge helicopter – the NPA sole referenced event. This one accident caused TSB to make FOURTEEN recommendations, including 406 ELT, training and NVIS.
7. A13C0014 – Cessna 210 – DAY VFR flight into IMC. Day spatial disorientation, equivalent to night black hole was major factor, pilot recurrency training also a factor.
8. A16P0186 – Cessna Citation 500 jet – Night single pilot who did not meet night currency and likely suffered spatial disorientation. TC oversight of private operators was also cited
9. A17C0147 – Piper PA-23 250 Aztec – Attempted to conduct night landing at a private unlit runway in most probably very low light levels in white-out snowy conditions.
10. A18O0153 – Piper PA28R 200 – Night VFR in poor weather and pilot did not exercise good judgement or have valid license.
11. A19O0178 – Piper PA-32 260 – Night VFR in marginal weather with spatial disorientation resulting in LOC-I. This accident was cited by TSB as another example of vague Night VFR rules. No mention was made of NVIS but the TSB did note that TC was going to propose that "would lead to updates to the night VFR requirements and changes that would require 2 levels of night training." TSB also stated that they had investigated 5 other fatal accidents that highlighted the lack of clarity in the regulations regarding visual references.
12. A19Q0153 – Cessna 172 – Cargair Night VFR flight into IMC twice near CYSC before the pilot under training crashed. Another example, like many above when GA pilots flew into deteriorating weather because of decision bias or ineffective training.

Most notably, the TSB did not propose an accident prevention strategy for these aircraft accidents that was technology driven. The TSB did note in its A19O0178 Report (number 11 above), that TC had advised the TSB that it would be developing a new two-tiered licensing structure and new equipment requirements that would be released in an NPA.

These reports, only one of which is a helicopter accident, demonstrate that when pilots attempt to fly VFR at night there are many weather and lighting (visibility) challenges. This supports the Statement of the Problem but not the proposed regulatory amendments or technology-based solutions for aircraft operators.

POLICY CONSIDERATIONS

Several policy considerations were provided, all of which addressed new requirements for night VFR only. However, the only proposed changes this NPA provides is the definition of VFR flight in controlled and uncontrolled airspace, CAR 602.114 (a) (b) (c) and CAR 602.115 (a) (b), to the current framework. The Proposed Changes make use of statements that are subjective and prescriptive. Most notably and more importantly, the impact to day VFR is as equally impacted however not assessed or even addressed in this NPA.

The Policy Considerations failed to address the impacts of redefining VFR in controlled airspace and uncontrolled airspace with respect to current available weather observations and the costs associated with introducing Night Vision Imaging Systems (NVIS) to its definition.

Introducing NVIS to its VFR at night definition is not only impractical and unreasonable, but it has not even been proven

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to eliminate the risk associated with night VFR flight. There are no statistics corroborating the enhanced safety of this proposed change, particularly in fixed wing operations, and more research should be conducted prior to introducing it into a policy change of this significance.

Many of the elements that were identified in the policy considerations, such as increasing training for night VFR ratings, and introducing certain IFR procedures to night VFR were reviewed to address the Statement of the Problem (risks associated with night VFR in areas of the country of insufficient cultural lighting) however this NPA fails to address any of these elements.

WEATHER (VISIBILITY MINIMA) ASSESSMENT

Changing the definition of VFR flight to:

a) *either by day or night, the aircraft is operated with visual reference to ground or water, including the frozen surface thereof, and objects on the surface that provide a discernible horizon outside of the cockpit to allow the pilot to maintain control of and to manoeuvre the aircraft by external visual reference;*

will make VFR flight planning virtually impossible unless changes to weather reporting is also changed, which has not been assessed in the NPA but proposed to be addressed and assessed in subsequent NPAs.

- *the amendments to sections 602.114 and 602.115 of the CARs" will also require revisions of the weather reporting for VFR flight if no discernable horizon. Additionally, "night VFR rating assessment process and currency requirements … will be done through a subsequent NPA.*

Since there are currently no weather reporting criteria which includes discernable horizon, pilots could not know, that at any point during their VFR flight, they may encounter periods of flight that would not meet the proposed definition. Transport Canada cannot consider imposing a change without considering all the effects it will cause. As written, pilots will be grounded during the day in marginal VFR and at night until these weather changes are assessed through another NPA and go through the CARAC process. This is unreasonable and directly impacts our freedom to fly.

VFR weather and lighting conditions changes need to be assessed and considered carefully. With current flight visibilities for aircraft as low as one mile during the day and two miles at night, clear of cloud in uncontrolled airspace, pilots have a brief window of time to react to rapidly deteriorating weather. At an average of 120 mph (100 knots), pilots have approximately 30 second during the day and approximately 60 seconds at night to recognize and avoid deteriorating weather.

Many human-factors studies have shown that a typical alert response for the average pilot is 15 seconds, leaving the average day VFR pilot 15 seconds to commence actions to avoid inadvertent Instrument Meteorological Conditions (IMC). The night VFR pilot has a few more seconds (due to the increase training requirements for night VFR) but detecting clouds and obscuring conditions at night is very difficult. Response times will therefore be longer at night. NVIS cannot detect clouds and weather well. In fact, pilots wearing NVIS can fly into IMC with just as little or no warning. Therefore, NVIS technology doesn't increase warning time for deteriorating weather. Day VFR and night VFR weather limits could be increased to enhance safety and avoid inadvertent IMC situations, especially for night VFR flights, without the requirement for NVIS.

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NIGHT VISION IMAGING SYSTEM (NVIS) ASSESSMENT

Based on the current Transport Canada definition, NVIS means:

- *an imaging system worn or mounted to the aircraft allowing the pilot(s) to maintain control of the aircraft by visual references to terrain and ground objects as well as providing a discernible horizon. NVIS operations are not equipment specific such as Night Vision Goggles (NVG) or Enhanced Vision System (EVS) but rather* ***based on equipment performance.***
- *While NVG and EVS are the most commonly available NVIS, an operator may request to use any existing or future imaging systems such as Combined Vision Guidance Systems (CVGS) or Fused Vision Imaging Systems (FVIS). Such technologies may include a variety of sensors capable of light intensification, thermal imagery, radar imagery, laser imagery, synthetic vision systems (SVS) or any combination thereof.*
- *Any imaging system chosen to conduct NVIS operations must be capable of meeting the requirements as per definitions included herein for VFR Aided and VMC and be accompanied Radio Technical Commission for Aeronautics or Canadian Technical Standard Order documentation.*

Although this NPA proposes the inclusion of NVIS in its definition of night VFR, it makes no mention of defining the equipment performance requirements that defines a NVIS. It is unreasonable for TC to expect stakeholders to provide feedback on the implementation of NVIS in the definition of VFR without considering the performance requirements.

Additionally, according to Advisory Circular (AC) No. 603-001, dated March 31, 2020, special authorization (SA) is still required to operate with an approved NVIS. The SA is mandatory for Canadian air operators holding an AOC issued under Part VII of the CARs and for private operators holding a PORD issued under subpart 604 of the CARs that wish to operate NVIS and is subject to a Risk Assessment and Dispatch Authority Procedures Matrix.

The AC on its own does not change, create, amend regulatory requirements, nor does it establish minimum standards and does not include GA aircraft operators, therefore was not assessed for GA use, yet the introduction of NVIS in the definitions of VFR would significantly impact GA, the majority, by a large margin, of VFR flights in Canada. Additionally, the AC introduces many new definitions that are being used to support the proposed changes in this NPA.

This NPA does not make any mention of the known risks associated with operating with NVIS (as per Flights Safety Foundation: Fatigue, over-confidence, complacency, lighting discipline) or weather minima required to operate with NVIS, flight experience using NVIS and recency/currency.

The introduction of NVIS in the definition night VFR fails to address any of the safety risks associated with its implementation and therefore should not be included in its definition without proper assessment and the consideration of the full potential of its impact.

It is therefore determined that this NPA should not introduce additional aircraft equipment requirements beyond those currently required for flight in either VFR conditions, either Day or Night or IFR conditions.

TRAINING REQUIREMENTS ASSESSMENT

The introduction of NVIS in the definition of VFR flight must take into consideration the implications to training requirements at the time of its introduction. It is unreasonable to introduce NVIS without also introducing the training requirements to meet the ground and flight requirements. This would leave all of general aviation pilots grounded at night in VMC for an undefined and potentially extended period of time which directly impacts our freedom to fly.

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All NVIS operations currently come with very specific ground and flight training requirements for commercial and private aircraft operators (does not include general aviation), stated in AC 603-001. This NPA makes no proposed changes to night VFR training requirements, with or without the assistance of NVIS.

Considerations regarding training requirements and standards that will undoubtedly impact CARs Section 4 would be an eventual outcome of future policy amendments, are not addressed or assessed and are well beyond the scope of this NPA. While a few of the aforementioned TSB Reports did cite Pilot Decision Making (PDM) as an important cause factor in these accidents, and COPA would agree that enhancing PDM training is encouraged as a foundation of our Safety Program, these considerations seem to go beyond the proposed changes of this NPA but could address in whole or in part, the Statement of the Problem.

SAFETY RISKS ASSESSMENT

The Statement of the Problem of this NPA is to address the risks associated with flying VFR at night in areas of the country with insufficient cultural lighting. Although COPA does agree that some revised regulations for VFR flight at night could reduce the numbers of incidents and accidents, changing the definition of VFR flight at night to include NVIS will not accomplish this. In fact, introducing new equipage without contemplating revising weather minima, training, currency, proficiency is not only short sighted but will in reality increase the risk to aviation safety.

As mentioned above, AIC 603-001 currently states the training and currency requirements for commercial and private aircraft operators which does not include general aviation, does not change, create or amend regulatory requirements, nor does it establish minimum standards.

Additionally, without a reportable discernable horizon or reportable sufficient cultural lighting in weather reporting systems, visibility remains subjective (“with the naked eye”) and does not address the Statement of the Problem and the risks associated with flying VFR at night in areas of the country with insufficient cultural lighting remain.

FINANCIAL IMPACT ASSESSMENT

The introduction of the requirement of the carriage of (certified) NVIS for night VFR, not only impacts weather reporting changes, training requirements changes but will also have a significant financial impact to a section of the aviation industry which is already heavily burdened by expensive mandatory regulations.

At the present time, there is a new 406MHz ELT mandate coming into effect in 2025 which requires all GA aircraft owners to purchase and install a new 406 MHz ELT. Any new potential equipment requirements will have to be heavily assessed against all current and other future potential equipage mandates. The majority of commercial operators affected by this change and extra equipage could be passed on to their customers, however, for GA, representing close to 90% of all Canadian registered aircraft are, the aircraft owner will bear the entirety of the cost.

Based on an economic impact assessment, conducted in 2017 by InterVistas for COPA, GA contributes over nine (9) billion dollars in economic output nationally and directly accounts for almost 36,000 full time jobs in communities across the country. Any financial impact to this sector of the aviation industry will have a significant impact on the Canadian economy as a whole, which is just starting to recover from the detrimental effects of COIVD-19.

No financial impact assessment to Canadian and foreign operators, specifically general aviation, was conducted for the

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proposed changes in this NPA. It is unacceptable to introduce new mandatory equipment without as financial impact assessment.

RECOMMENDATIONS

The recommendations herein focus on our assessment of the TC consultation process, the changes to the VFR flight definition and the introduction of NVIS to night VFR as well as the impact it will have on weather reporting, training and finance. The recommendations are:

1. No country has expanded on the definition of VFR flight. TC should collaborate with the International Civil Aviation Organization (ICAO), the Federal Aviation Administration (FAA), and other ICAO compliant countries as well as with leaders in the general aviation community such as COPA, to develop an effective, non-restrictive and objective definition. This change should not be addressed in this NPA.

2. In order to address the safety concerns associated with the risks of night VFR flight in areas of the country of insufficient cultural lighting, the definition of VFR flight need not be changed.

3. To create a much safer environment for VFR pilots flying at night in areas of the country of insufficient cultural lighting, which is the statement of the problem, consideration should be given to changing the training requirements for night VFR, which is outside the scope of this NPA. The definition of VFR flight at night need not be changed for these potential future amendments. COPA should be part of any initial discussions regarding changes in night VFR training requirements.

4. To create a much safer environment for VFR pilots flying at night in areas of the country of insufficient cultural lighting, which is the statement of the problem, consideration should be given to amending the minimum weather requirements for night VFR, which is outside the scope of this NPA. The definition for VFR flight at night need not be changed for these potential future amendments. COPA should be part of any initial discussions regarding changes in night VFR minimum weather requirements.

5. Discernible horizon and cultural lighting need to be defined in terms of visibility and be reportable through aviation weather dissemination tools in order that pilots can flight plan appropriately. Proper initial consultations with affected stakeholders should be conducted. This change is not addressed in this NPA.

6. NVIS operating training requirements and performance requirements are not addressed in this NPA. It is unreasonable to introduce the implementation of new technology to the General Aviation section of the aviation industry without having considered the training, financial and safety impacts. The introduction of NVIS in the definition night VFR should not be included in its definition without proper assessment and the consideration of the full potential of its impact. This NPA should not introduce additional aircraft equipment requirements beyond those currently required for flight in either VFR conditions, either Day or Night or IFR conditions.

7. TC must conduct a proper and extensive financial impact assessment on all operators and stakeholders affected by the proposed changes, such as the introduction to new certified equipment, additional training, changes to weather reporting (NAV CANADA, ForeFlight, Garmin, etc.) systems, etc.

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CONCLUSION

The proposed changes to the regulations introduce several future potential amendments that have not been properly assessed or addressed.

TC must rightfully engage with COPA on aircraft equipage, pilot training, PDM, proficiency, and any other proposed regulatory amendments that impacts general aviator's freedom to fly.

The scope of this NPA fails to address the Statement of the Problem which is the risks associated with night VFR in areas of the country of insufficient cultural lighting. Amending CARs 602.114 and 115 as proposed will not mitigate this risk. It has been determined that changing the definition of VFR flight is not judicious.

We thank you for the opportunity to provide our feedback for this NPA.

Sincerely,

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