Transport Canada Transports Canada

Special Issue
1/2024

AVIATION SAFETY LETTER

Transport Canada's Approach Ban Safety Initiative

In This Issue...

- **Why We Need to Act Now:** ***The Compelling Safety Case***
- **Being Led Down the Garden Path:** ***Understanding the Human Factors Contributing to Low Visibility Approach Accidents***
- **Canadian Stakeholders Have a Voice:** ***Understanding the Consultation Process***

TP 185E

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Canada

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Welcome to this Special Issue of the *Aviation Safety Letter*

Andy Cook
Associate Director-General,
Civil Aviation,
Transport Canada

As the Team Lead of the approach ban safety initiative, I have the privilege of working with a team of dedicated aviation professionals who are striving to advance aviation safety in Canada. In this issue, you'll have an opportunity to hear directly from the members of our team about the compelling safety issues that have been identified by the Transportation Safety Board (TSB)—and what we are doing to address them.

Safety must always be our priority!

Transport Canada strives to ensure a safe and secure transportation system in Canada through laws, regulations, policies and oversight activities. To that end, we are currently developing new regulations and guidance material that is intended to enhance safety during instrument approaches. The safety rationale for these new regulations is explained in *Why We Need to Act Now: The Compelling Safety Case* and *Being Led Down the Garden Path*: *Understanding the Human Factors Contributing to Low Visibility Approach Accidents*.

All Canadians have an important role to play in this regulatory development process. Your feedback is very important to us and will help us develop regulations that will address the critical safety imperatives; these provisions will also need to be easy to understand and apply by pilots in the dynamic operational environment. The right of stakeholders to provide their input, and the system that has been developed to facilitate this, is explained in *Canadian Stakeholders Have a Voice: Understanding the Consultation Process.*

Another important goal of the approach ban safety initiative is to increase safety awareness and help folks to understand the operational changes that will accompany the implementation of the new regulations. You can learn about this through the articles which discuss the steps being taken to simplify runway level of service visibility requirements, new instrument procedure design criteria and the introduction of enhanced flight vision systems (EFVS) and other new technologies that will improve both flight safety and operational capability.

Our consultation process is well underway and will continue. We have received a large volume of strong support for this initiative, and there are also those who have expressed their concerns and proposed other ideas. All your feedback is important!

This special issue of the *Aviation Safety Letter* is intended to further our ongoing two-way discussion with our stakeholders. We hope that it will help Canadian stakeholders understand the critical safety issues that need to be addressed. We also hope that it will encourage everyone to share their comments and suggestions.

We are moving forward to improve safety—and we are listening! △

Andy Cook is the Associate Director-General, Civil Aviation at Transport Canada. As a military pilot, Andy flew the CT114 Tutor as an instructor and as a Team Coordinator for the RCAF Snowbirds (431 Sqn). He flew the C130 Hercules in the air refuelling and tactical air transport roles and the A310 as Commanding Officer of 437 Squadron, RCAF. Andy's experience in civil aviation includes management and flying with a subpart 703/704/705 air operator, as well as several years in general aviation. He is type rated on the A310, ATR42 and L100 (C130).

Why We Need to Act Now: *The Compelling Safety Case*

by Robert Kostecka, Inspector, Flight Standards Division, Civil Aviation, Transport Canada

Over the years, there have been many accidents and incidents related to approaches and landings in reduced visibility conditions. The Transportation Safety Board (TSB) has rightly expressed concern that these incidents have persisted, even after the implementation of the current approach ban regulations.

Between December 2006 (the implementation date of the current regulations) and May 2020, the TSB identified 32 events that occurred following approaches conducted with inadequate visual references. Of these 32 incidents, 18 occurred during a landing in weather conditions where the reported visibility was below the charted visibility value published on the instrument approach procedure (IAP).

The analysis of the accidents and incidents that occurred in visibility that was less than the charted visibility clearly demonstrates that approaches in these conditions carry an increased level of risk. This is the fundamental issue that Transport Canada is striving to address through the approach ban safety initiative.

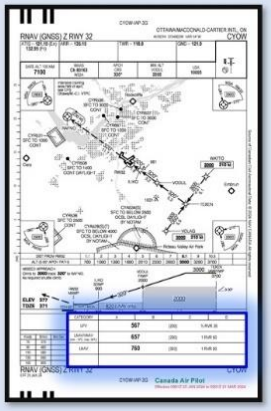
The analysis of accidents and incidents in visibility that was less than the charted visibility clearly demonstrates that approaches in these conditions carry an increased level of risk.
Credit: Transportation Safety Board of Canada

To better understand this important safety issue, as well as the necessary steps to address it, this article will outline:

- why adherence to the charted visibility is important to reducing risk;
- why the current situation in Canada needs to be addressed; and
- the solutions that are under development to address the identified safety issues.

Why adherence to charted visibility is important to reducing risk

The visibility that is published on an IAP serves a very important purpose. It specifies the minimum visibility at which pilots should have sufficient visual cues available to transition to flight by visual reference and successfully land the aircraft.



CATEGORY	A	B	C	D
LPV	567	(200)	½ RVR 26	
LNAV/VNAV (min. -19°C, max. 54°C)	657	(290)	1 RVR 50	
LNAV	760	(393)	1 RVR 50	

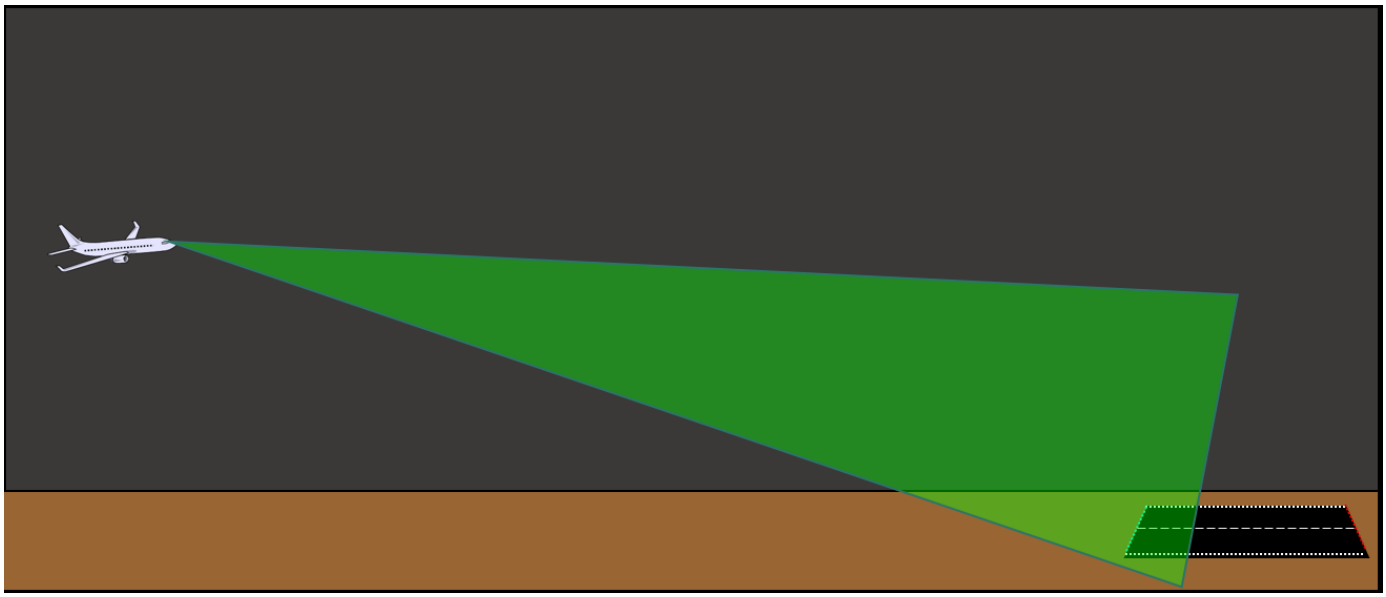
Pilots and operators need to understand the important purpose that charted visibility serves. Example instrument approach procedure via NAV CANADA.

NOT FOR NAVIGATION

When conducting an instrument approach, in order to continue the descent to a landing, the pilot must establish the required visual reference no later than the decision altitude (DA), decision height (DH) or minimum decision altitude (MDA). As the descent to landing continues, the pilot needs to have sufficient visibility to:

- assess the position of the aircraft relative to the runway;
- maintain control of the flight path both laterally and vertically;
- counter the effect of crosswind and prevent lateral drift;
- align the fuselage during the landing flare; and
- maintain directional control during the touchdown and rollout.

The charted visibility that appears on an IAP is the minimum visibility required to provide the pilot with sufficient visual cues to safely perform the critical tasks listed above, while continuing the descent (below DA, DH or MDA) to a landing.



The charted visibility is the minimum visibility required to provide the pilot with sufficient visual cues to safely continue the descent (below DA, DH or MDA) to a landing.
Illustration by Robert Kostecka

The charted visibility is established through requirements specified in TP 308–*Criteria for the Development of Instrument Procedures.* These requirements include such things as the approach type, DH or HAT and approach lighting, to name just a few.

Throughout the world—as per the International Civil Aviation Organization (ICAO) standard—the reported visibility must be equal to or greater than the charted visibility for an instrument approach to be continued into the final approach segment. Simply put, the *required minimum visibility* is the *charted visibility*.

In contrast, here in Canada, we currently consider the charted visibility as being merely "*advisory* visibility." For the reasons described below, this needs to change.

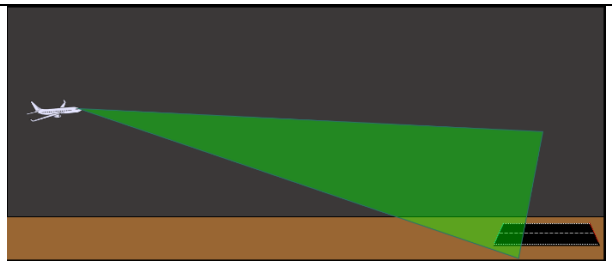
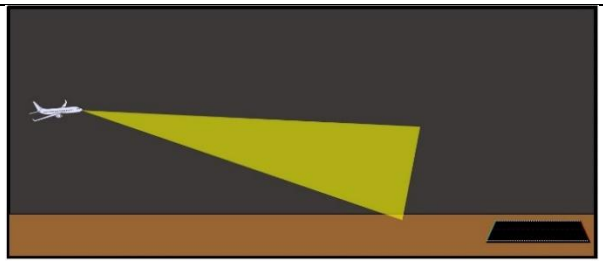
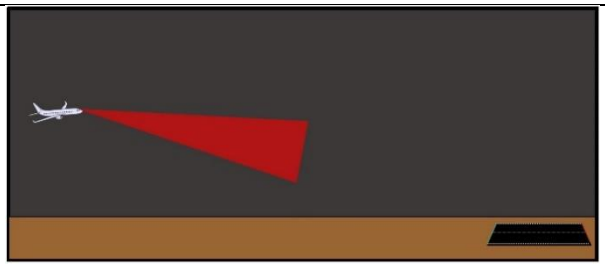
Why the current situation in Canada needs to be addressed

At present, under the *Canadian Aviation Regulations* (CARs), all air operators are permitted to conduct an instrument approach with 75% of the charted visibility, and those with specific approval can be authorized to conduct an instrument approach with as little as 50% of charted visibility. There is no requirement respecting charted visibility for air operators North of 60˚, unless runway visual range (RVR) is reported.

For general aviation, the approach ban specifies visibility as low as RVR A 1200 and RVR B 600. This means that general aviation pilots and operators have the same visibility requirements for instrument approaches as airline pilots conducting Category II approaches. It should be noted that this requirement is only applicable to those runways where RVR is installed, and general aviation pilots do not have the aircraft equipment, ground equipment or training that are necessary to conduct Category II operations.

In considering the current regulations, we need to remember that, in accordance with the approach design criteria, the charted visibility is the minimum visibility required to provide the pilot with sufficient visual cues to safely continue the descent (below DA, DH or MDA) to a landing. The current regulations are based on using some portion of the charted visibility (i.e., some portion of the minimum visibility dictated by the IAP design criteria).

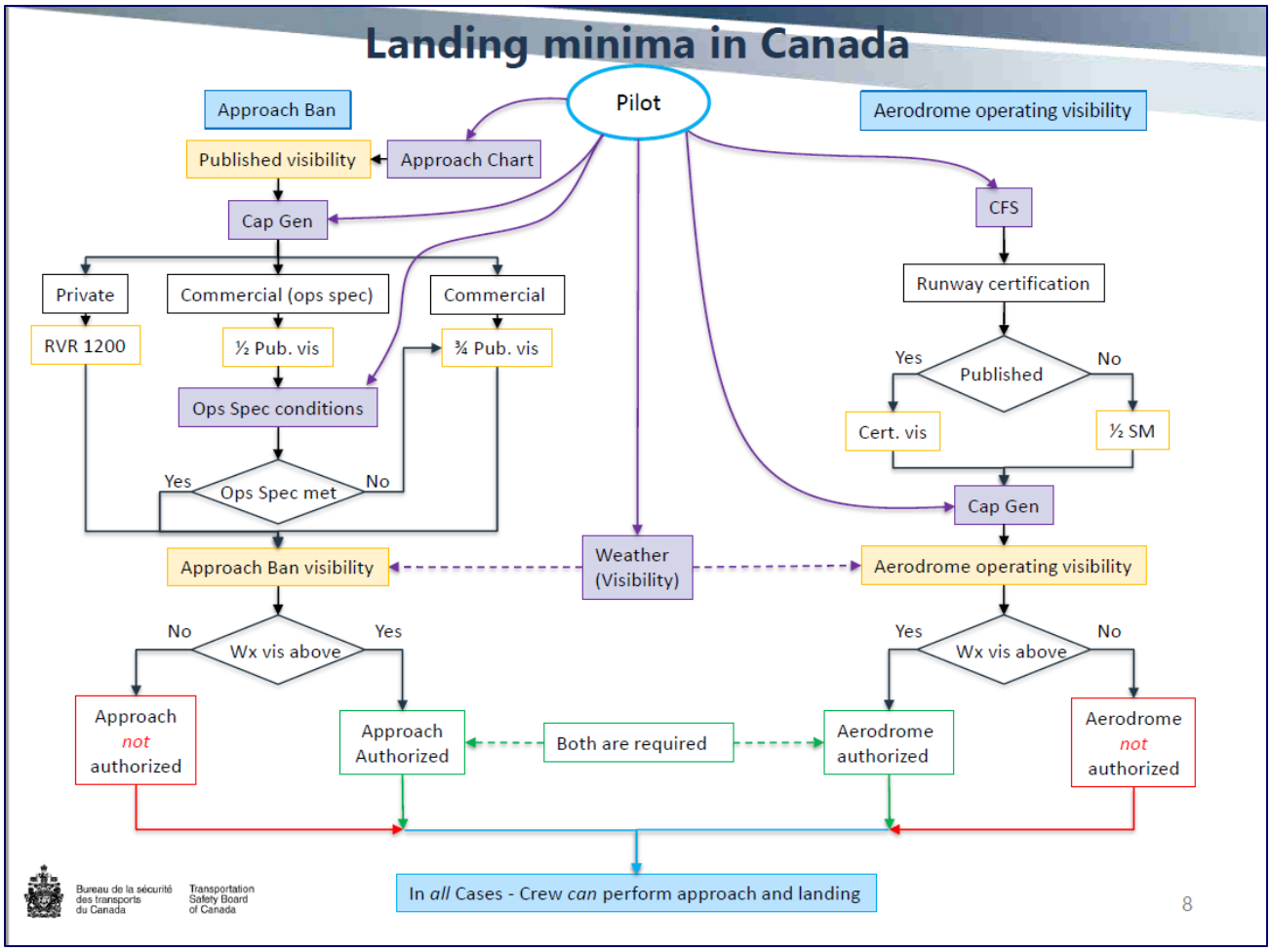
How Canada's current approach ban regulations stack up

	Throughout the world—as per the ICAO standard—the reported visibility must be equal to or greater than the charted visibility for an instrument approach to be continued into the final approach segment.
	CAR 700.10 allows any commercial operator to conduct approaches with 75% of charted visibility. This is only 75% of the minimum visibility required to provide the pilot with sufficient visual cues to safely continue the descent (below DA, DH or MDA) to a landing.
	CAR 703.41, 704.37 and 705.48 allow commercial operators with a specific approval to conduct approaches with 50% of the charted visibility. This is only 50% of the minimum visibility required to provide the pilot with sufficient visual cues to safely continue the descent (below DA, DH or MDA) to a landing
 *Illustrations by Robert Kostecka*	CAR 700.10 stipulates that there is no approach visibility requirement North of 60˚, unless RVR is reported. CAR 602.129 stipulates that for general aviation, there is no approach visibility requirement unless RVR is reported.

The risks associated with conducting an approach in less than the charted visibility are effectively described in TSB Report A15H0002. This collision with terrain occurred on March 29, 2015 in Halifax, NS, when the reported visibility was 50% of the charted visibility. The report points to elements such as the flight crew's expectations and plan continuation bias that are common to other accidents and incidents that have occurred during approaches with less than the charted visibility. These human factors are discussed in detail in *Being Led Down the Garden Path: Understanding the Human Factors Contributing to Low Visibility Approach Accidents*, which appears later in this issue.

In a subsequent investigation of another accident that occurred when the reported visibility was less than the charted visibility (TSB Report A18Q0030), the TSB also commented on how complicated the current regulations and procedures for determining approach visibility are. The complex regulations governing whether a flight crew is permitted to conduct an approach is compounded by another complex set of requirements related to runway level of service; these requirements are used to determine whether the visibility is sufficient to operate on the aerodrome. In addition, the hierarchy of visibility reports used for runway level of service is also overly complicated and does not align with the hierarchy of visibility reports used in the approach ban regulations.

To illustrate the situation, the TSB produced a flowchart that depicts these two separate unaligned decision-making processes. This has informally been referred to as the "spaghetti diagram."



The TSB used this diagram to illustrate the complexity of the current regulations and associated procedures for determining if the visibility is suitable for conducting an approach.

Pilots find the current regulations to be overly complicated, confusing and a source of unnecessary workload and distraction during critical phases of flight. Several air operators have also expressed their safety concerns about the excessive complexity of our current regulations and have called for change.

In view of the current situation, the TSB made two key recommendations that require action:

- **TSB Recommendation A20-01—Landing Minima in Canada:**

  The Transportation Safety Board of Canada recommended that the Department of Transport review and simplify operating minima for approaches and landings at Canadian aerodromes.

- **TSB Recommendation A20-02—Landing Minima in Canada:**

  The Transportation Safety Board of Canada recommends that the Department of Transport introduce a mechanism to stop approaches and landings that are actually banned.

The solutions being developed to address the identified safety issues

Canada's proposed regulations would *prescribe* the visibility required to continue an instrument approach into the final approach segment in a simple and straightforward manner. Simply put, the reported visibility would need to be equal to or greater than the visibility published on the IAP.

To facilitate this change, IAP design criteria are being updated to ensure that the required visibility published for all instrument approaches will be greater than or equal to the runway level of service.

In addition, Transport Canada (TC) has conducted a comprehensive review of the processes for determining the required visibility for all phases of flight. During this review, numerous opportunities for improvement were identified; these would be addressed by simplifying and harmonizing the visibility report hierarchies for all phases of flight.

These changes are intended to eliminate the two separate decision-making processes that pilots currently have to determine the required visibility for the approach and landing. The alignment of visibility report hierarchies would also simplify the decision-making process for take-off.

TC is also developing regulations that would provide specific exceptions to the general rule. These proposed provisions are intended to provide operational flexibility while ensuring that the safety imperative is respected.

Transport Canada's goal is one that is shared by all pilots and operators: advancing flight safety. Our proposed regulations are being designed to address the fundamental safety issues that have been identified. They are also intended to benefit pilots and operators by providing regulations that are easy to understand and easy to apply. △

Robert Kostecka holds type ratings on a variety of Airbus and Boeing aircraft, as well as the DHC-8 and CRJ. His 13 000 hrs of flying time includes 4 000 hrs in command on large Transport Category jet aircraft. He has instructed on a wide variety of aircraft types and holds Category 1 Flight Instructor Rating. Robert's experience at TC includes leading the development of flight operations guidance on wet and contaminated runways and serving on the international team that conducted the operational evaluation of the Airbus A380.

Being Led Down the Garden Path: *Understanding the Human Factors Contributing to Low Visibility Approach Accidents*

by Joel Morley, Chief of Aviation Safety Analysis, Civil Aviation, Transport Canada

Background: A slow move from advisory to prescribed visibility

The International Civil Aviation Organization standards and recommended practices (ICAO SARPS) are established to ensure a uniform safety standard throughout the world. They stipulate that an instrument approach shall not be continued into the final approach segment unless the reported visibility is at or above the visibility specified on the instrument approach procedure (commonly referred to as the "charted visibility").

In spite of this globally accepted ICAO standard, historically in Canada the published visibility associated with an instrument approach has only been advisory. Up to now, although there has been some movement towards the internationally accepted standard, this progress has been very slow.

This article describes:

- the increased level of risk that exists when approaches are conducted with less than the charted visibility;
- an analysis of accidents that occurred with less than the charted visibility and the critical human factors that are common to them; and
- how the new, simplified regulations will help improve safety during instrument approaches and align Canada with the global aviation community.

Overview of approach ban regulation development in Canada

Historically: Only runways serviced with a runway visual range (RVR) were subject to an approach ban. Approaches were permitted anytime RVR was greater than 1200 or was not provided.

2002: Following a number of accidents, the Transportation Safety Board (TSB) issued recommendation A02-01, calling on the Department of Transport to "expedite the approach ban regulations prohibiting pilots from conducting approaches in visibility conditions that are not adequate for the approach to be conducted safely."

2006: Current approach ban regulations were published. Due to a series of compromises, the resulting approach ban regulations remained unchanged for general aviation and allowed commercial operators to perform approaches with 75% of the published advisory visibility or 50% if the company had been granted the required operations specification.

2017: Following a low visibility approach accident (A15H0002), Transport Canada Civil Aviation (TCCA) began re-examining the approach ban. A white paper was produced, recommending that TCCA take the necessary steps to implement prescribed visibility limits for instrument approaches.

2020: Responding to additional reduced visibility approach and landing accidents, the TSB issued recommendations A20-01 and A20-02, calling on the Department of Transport to review and simplify operating minima for approaches and to induce a mechanism to stop approaches that are not permitted by regulation.

2021: Transport Canada (TC) issued Notice of Proposed Amendment (NPA) 2021-011, outlining the intent to move toward prescribed approach visibility limits

Being led down the garden path: How reduced visibility approaches increase risk

Given that the published approach visibility has been advisory for many years in Canada, it is reasonable to conclude that most of the approaches conducted in accordance with these regulations end successfully (with either a missed approach or an uneventful landing).

However, accidents continue to happen. In 2020, the TSB identified 18 approach and landing accidents where the reported visibility was less than that published on the approach chart. Significantly, these accidents took place during the 14 years following the introduction of the current approach ban regulations in 2006.

There is a clear pattern that emerges when one studies reduced visibility approaches that were unsuccessful. This pattern clearly demonstrates how these approaches carry an increased level of risk. This article will examine five of these accidents to illustrate this pattern.

Table 1 (*page 13*) provides a summary of five low visibility landing accidents. In each case, the crew were aware of the threat presented by the weather. They had been monitoring it throughout the flight and had reviewed the missed approach procedure and plans for diversion to the alternate. However, in all cases, attempting the approach was permitted by the current regulations (or was believed to be permitted).

When faced with visibility below the advisory for the approach to be conducted but above the minimum required by the regulation, the flight crews were faced with an obvious choice. In these circumstances, crews will almost always conduct the approach and attempt to land.

Upon arriving at minimums, all the occurrence flight crews observed *some* visual cues. While these visual cues may have been enough to identify the runway environment, there may not have been enough visual cues to fully judge and control the aircraft's trajectory towards the runway. At this point, decision-making required more judgement, since there are no clear criteria for what visual references are sufficient. In these occurrences, expecting the visual cues to improve as they get closer to the runway, each of these flight crews continued.

At some point in all these accidents, there was some disturbance to the flight path that required intervention by the flight crew. In several cases, the aircraft was above the ideal trajectory, in several cases, it was below, and in one case, a lateral deviation was introduced. In some cases, these deviations were noted, and attempts were made to correct, and in others, the crew were not aware of the deviation until it was too late.

The question often posed in relation to these occurrences (with the benefit of hindsight) is why, when faced with minimal visual cues and a disturbance to the flight path, did the crew not execute a missed approach in time to prevent an accident?

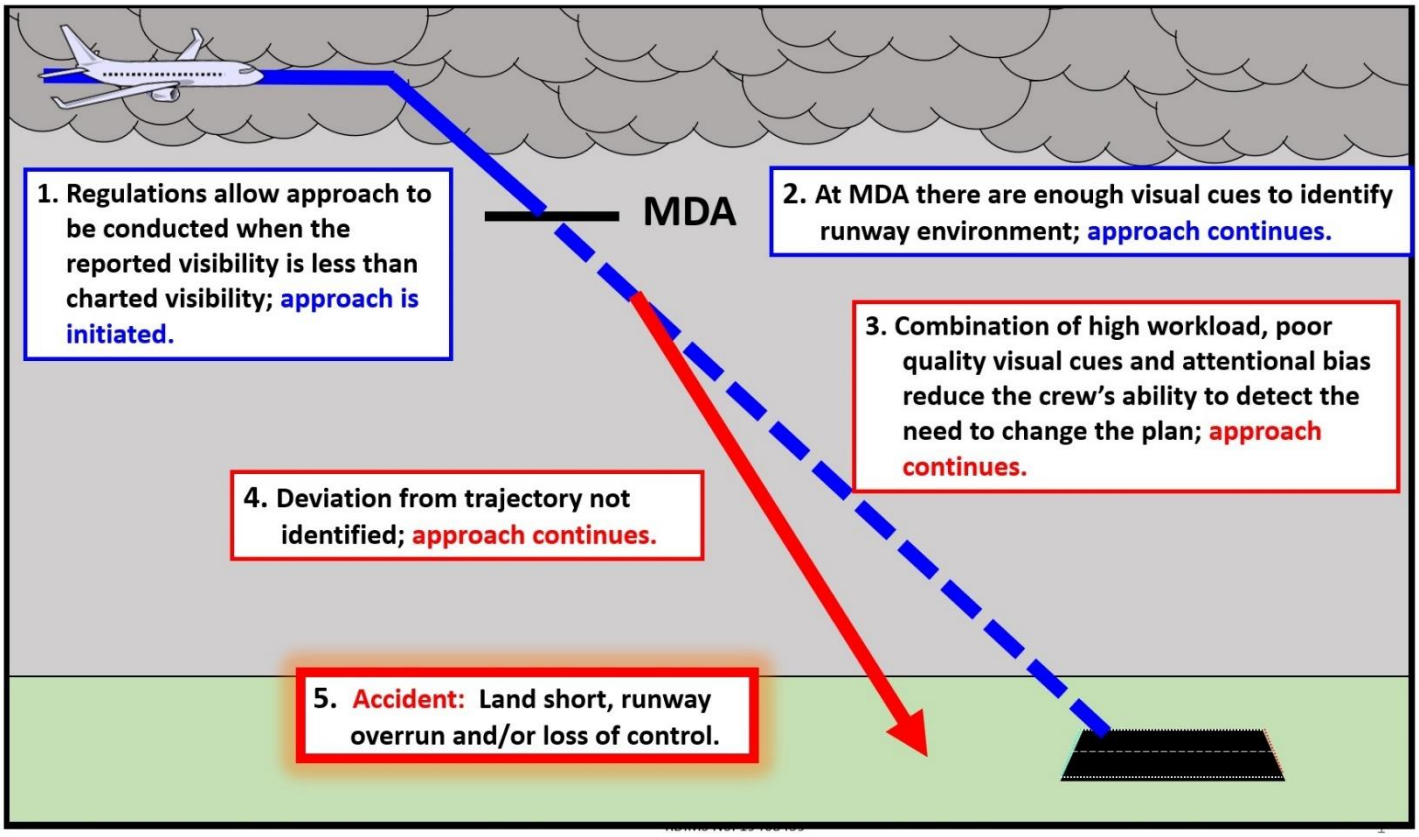
The answer is that during a period of high workload, where information is arriving piece-meal or is unclear and the task of landing the aircraft is almost complete, biases in information processing are at their strongest, and the available information is not sufficiently compelling to prompt a change of plan.

Information processing biases are a normal byproduct of the human ability to direct their limited attentional resources when operating in complex environments. Expectation bias and plan continuation bias help explain why the cues available in these occurrences were insufficient to prompt a timely go-around.

Expectation bias: When people expect one situation, they are less likely to notice cues indicating that the situation is not quite what it seems. Expectation bias is worsened when people are required to integrate new information that arrives piecemeal over time in incomplete, sometimes ambiguous, fragments.

Plan continuation bias: Once a plan has been made and implemented, cues indicating the plan is not working need to be more salient or compelling if they are to be recognized due to the natural tendency of our attentional processes to attend more to information that supports our current view. Plan continuation bias becomes even stronger when a task (e.g., a landing) is on the verge of being completed.

This combination of poor-quality visual cues and normal limitations in information processing make it more difficult to recognize the fact that these cues were insufficient to effectively judge the aircraft's trajectory relative to the runway contributed to the very late detection of an undesired aircraft state. By the time the deviation was detected by the crew, the aircraft was close to the ground, in a low energy state with few visual cues from which to execute a missed approach. All five examples resulted in accidents including landing short, runway overruns, a lateral runway excursion and one loss of control.



Anatomy of a reduced visibility landing accident.
Illustration by Joel Morley / Robert Kostecka

Being “led down the garden path” is a useful idiom to describe the sequence of events in these occurrences. In common usage, the phrase means to deceive or mislead someone. While the exact origins of the phrase are not known, it is often attributed to referring to “deceitful courtships or dalliances in pleasant and possibly secluded places.” In all of these occurrences, the crew were seduced by the presence of a few visual cues, whose aim was to lead them further down the approach and whose inadequacies were not recognized until it was too late.

How clear regulations will help

Bringing Canada’s regulations in line with international best practice by adopting a prescribed visibility limit for instrument approaches will serve to provide clear decision-making guidelines for crews. Approaches with a higher risk of placing crews in a situation with inadequate visual cues will no longer be permitted, and crews will have clear guidance to assist them in their decision-making.

Like the principle of establishing clear stabilized approach criteria to make sure that all involved explicitly understand when a missed approach is expected, prescribed visibility limits will serve to set clear expectations about when an approach, carrying increased risk and with limited probability of being successful, should not be attempted.

Table 1: A selection of reduced visibility occurrences

A97H0011: A CL-65 aircraft conducted a CAT 1 ILS approach to Runway 15 in Fredericton. The weather on arrival was reported visibility of ⅛ mile in fog with an RVR of 1200. An approach was permitted under the regulations at the time. At minimums, the pilot monitoring called approach lights, and the pilot flying (PF) indicated they would continue with the landing. Shortly after autopilot disconnect, the aircraft began to deviate above the glidepath, and efforts to recover were unsuccessful. Upon reaching 35 ft, the captain assessed that the aircraft was not in a position to land safely and called for a go-around. During the go-around, the aircraft stalled aerodynamically and came to rest in the trees to the side of the runway. Nine passengers received serious injuries.

A05W0010: A DC-9 conducted a CAT 1 ILS approach and landed on Runway 34 in Calgary with a reported RVR of 1400. At minimums, the PF acquired the approach lights and elected to continue. A left roll was detected by the pilot monitoring shortly after auto-pilot disconnect, and the PF attempted to correct. The aircraft touched down left of the centre line, departed the runway and travelled 1 600 ft before climbing out on the missed approach procedure. While on the ground, an airport sign was struck damaging the aircraft’s landing gear. The aircraft returned to Calgary for a second ILS approach to the same runway and a successful landing. The TSB investigation found that with ¼ mile visibility in blowing snow, the available visual cues were inadequate to detect and correct the lateral deviation in the late stage of the approach and landing.

Table 1: A selection of reduced visibility occurrences *(cont.)*

A08O0333: A DHC-8-100 conducted a localizer approach (ILS with glideslope inoperable) to Runway 08 in North Bay using a Standard Constant Descent Angle (SCDA) technique. The weather at the time was 100-ft ceiling with visibilities of ½ to ¾ statute miles in light drizzle and mist. The advisory visibility for this approach is 1 SM, and the crew applied the company ops spec that allowed them to conduct the approach with ½ SM visibility. The SCDA was initiated approximately 1 nautical mile after crossing the final approach fix. As a result, the vertical profile was above the desired approach profile, and the aircraft arrived at the missed approach point approximately 220 ft above the minimum descent altitude (MDA). The crew were not aware they were above the desired flight path or the distance to the runway. At or near the MDA, the crew saw a few runway edge lights and decided to continue the approach. The runway end lights were obscured by a windrow, and the crew had no good visual references to indicate the distance down the runway. The aircraft touched down with approximately 1 100 ft of runway remaining and shortly after touchdown, the approach lights for Runway 26 came into view. The aircraft ran off the end of the runway and stopped in 2 to 3 ft of snow. There were no injuries, and the aircraft sustained minor damage.

A15H0002: An A320 aircraft conducted a localizer approach to Runway 05 in Halifax. A snowstorm was taking place at the time, and the aircraft had entered a hold due to a reported visibility of ¼ SM in heavy snow. The crew were monitoring the situation and were preparing to divert to their alternate airport of Moncton. Upon receiving a special weather update reporting ½ SM visibility in snow and drifting snow and a vertical visibility of 300 ft, the crew requested and were cleared for the approach. The company held an ops spec allowing an approach with 50% of the advisory visibility and, as such, the approach was now permitted. At minimums, the pilot monitoring (PM) called “lights only,” and the PF called “landing.” During the approach, the aircraft drifted below the required vertical profile, and this went undetected by the crew. On very short final, power lines came into view, and an attempt was made to climb. The aircraft struck the power lines and impacted the ground 740 ft short of the runway threshold. Overall, 25 people sustained injuries, and the aircraft was destroyed.

A18Q0030: A Beechcraft King Air A100 conducted a localized/distance measuring equipment (LOC/DME) approach to Runway 08 at Havre St. Pierre, Quebec landed 3 800 ft down the 4 500-ft runway and ran off the end. The reported visibility was ¼ SM in heavy snow and, although the approach ban regulations in place at the time would have required 75% of the advisory visibility of 1 SM for to conduct the approach, the captain believed the regulation did not apply to a weather report generated by an automated Weather Observing Station (AWOS). At minimums, the pilot monitoring called “minimums, no contact,” but the PF reported having contact and continued the approach. Crew coordination issues meant the aircraft was not configured for landing in a timely manner and, as a result, landing distance increased. Late on the approach, the crew acquired visual contact with a bare patch of pavement and attempted to align the aircraft with it. The PF lost awareness of distance over the runway and continued with the landing.

Table 2: Decision-making and information processing sequence in unsuccessful reduced visibility approaches

Occurrence Approach Conducted Advisory Visibility	Reduced visibility approach permitted by regulations ①	Some cues available at minimums–decision to continue ②	Ability to detect flight path deviation after minimums limited ③④	Outcome ⑤
	→ → →	→ → →	→ → →	→ → →
A97H0011 CAT 1 ILS to Runway 15 CYFC Advisory visibility ½ mile	RVR 1200 met minimum for approach ban at the time (⅛ mile visibility in fog).	PM had approach lights. Continued.	Aircraft deviated above glide path after autopilot disconnect. Captain called for go-around at 35 ft.	Aircraft stalled aerodynamically during go-around.
A05W0010 CAT 1 ILS to Runway 34 CYYC Advisory visibility ½ mile	RVR 1400 met minimum for approach ban at the time (visibility ¼ to ½ mile in blowing snow).	Identified approach lights and continued.	Left roll induced after autopilot disconnect. PM called deviation, PF correcting.	Aircraft departed left side of runway after touchdown. Impacted airport signage. Go-around initiated and returned to land.
A08O0333 LOC (GS out) to Runway 08 CYYB Advisory visibility 1 mile	Visibility variable between ¼ and ¾ SM. Crew applied company ops spec that allowed approach at ½ SM.	Crew had some of runway edge lights in view. Runway end lights obscured by windrow. Continued.	Late initiation of descent and resulting trajectory above the desired vertical profile not recognized by the crew placing the aircraft close to the runway at MDA. Crew did not have runway end lights (obscured by windrow) or other visual cues to effectively assess position relative to runway length.	Aircraft touched down 8 900 ft past the threshold of the 10 000-ft runway and ran off the end.

Table 2: Decision-making and information processing sequence in unsuccessful reduced visibility approaches *(cont.)*

Occurrence Approach Conducted Advisory Visibility	Reduced visibility approach permitted by regulations ①	Some cues available at minimums–decision to continue ②	Ability to detect flight path deviation after minimums limited ③④	Outcome ⑤
	→ → →	→ → →	→ → →	→ → →
A15H0002 LOC approach to Runway 05 CYHZ Advisory visibility 1 mile	Due to visibility of ¼ SM in heavy snow, crew held to wait for visibility to improve. Upon receiving report of ½ SM (50% of advisory visibility as allowed by company ops spec) crew initiated the approach.	Identified approach lights.	Aircraft descended below desired descent profile. Not detected by crew until power lines came into view on very short final.	Aircraft struck power lines and impacted the ground 740 ft short of the runway threshold.
A18Q0030 LOC/DME approach to Runway 08 CYGV Advisory visibility 1 mile	AWOS reported visibility was ¼ SM in heavy snow. Although regulations in place required 75% of advisory visibility (¾ SM in this case), captain believed AWOS visibility was not limiting and believed approach was permitted.	PM called "minimum, no contact." PF indicated having visual contact and continued approach.	Aircraft not configured for landing increasing landing distance. Crew had visual contact with bare patch of pavement and attempted to align aircraft. Distance down runway not recognized.	Aircraft touched down 700 ft from the end of the runway and ran off the end.

Joel Morley is the Chief of Aviation Safety Analysis for Transport Canada Civil Aviation. Prior to taking on this role, Joel served as a Human Factors Investigator with the Transportation Safety Board of Canada and as an Operational Safety and Human Factors Specialist with NAV CANADA. Joel completed his graduate education in Applied Psychology from Cranfield University in the UK. △

Runway Level of Service: *Important Changes to Simplify and Align*

by Robert Kostecka, Inspector Flight Standards Division, Civil Aviation, Transport Canada

Pilots are trained to know that for flight operations to be conducted safely, they need to understand and comply with their aircraft's limitations. For the same safety imperative, pilots operating under instrument flight rules (IFR) also need to understand and comply with the aerodrome's limitations. One of these aerodrome limitations—which is necessary to provide a recognized level of safety—is runway level of service.

The regulations reflect this safety requirement. Paragraph 602.96(2)(b) of the *Canadian Aviation Regulations* (CARs) requires that before taking off from, landing at or otherwise operating an aircraft at an aerodrome, the pilot in command of the aircraft needs to be satisfied that the aerodrome is suitable for the intended operation. Runway level of service is an important element in the determination of the suitability of an aerodrome for IFR operations.

Up to now, runway level of service visibility requirements have not been aligned with the visibility requirements for the take-off and approach/landing phases of flight. This lack of alignment has resulted in undue complexity and has imposed increased workload and unnecessary distraction for pilots during critical phases of flight.

The need to address this complexity is reflected in Transportation Safety Board (TSB) Recommendation A20-01: "that the Department of Transport review and simplify operating minima for approaches and landings at Canadian aerodromes." Simplifying these requirements is also supported by the feedback that Transport Canada has received from pilots and operators.

To better understand this important safety issue and the steps that are being taken to address the identified opportunities for improvement, this article will outline:

- an overview of runway level of service: the functions it is intended to serve, how it is determined and how this information is made available;
- the situation today: an explanation of our current hierarchy of visibility reports and the opportunities for improvement; and
- the way forward: the solutions that are being implemented to address the identified safety issues.

Overview of runway level of service

Runway level of service visibility requirements have been established to ensure that pilots have adequate visual cues to:

- establish and maintain situational awareness (i.e., allow pilots to know where they are on the aerodrome); and
- recognize and avoid other ground traffic, including other aircraft and/or vehicles (i.e., "see and avoid").

Runway level of service visibility requirements have been established to ensure that pilots have adequate visual cues to: establish and maintain situational awareness (i.e., allow pilots to know where they are on the aerodrome); and recognize and avoid other ground traffic, including other aircraft and/or vehicles (i.e., "see and avoid")
Source : Lisbon's Runway 21.jpg—Wikimedia Commons

This important limitation is applicable anytime an aircraft is manoeuvring on the ground, including pushback, taxi prior to take-off, take-off, approach/landing and taxi after landing.

The aerodrome operator is responsible for establishing the level of service for their aerodrome and for ensuring that the aerodrome is equipped and/or operated accordingly. These responsibilities are stipulated in TP 312– *Aerodrome Standards and Recommended Practices* and section 302.07 of the CARs. This critical visibility value is established in consideration of:

- **Aerodrome infrastructure requirements**, including (but not necessarily limited to):
    - markings and lighting for taxiways and runways (things that are visible to pilots), and
    - runway lighting circuitry and standby power requirements (things that are less obvious to pilots); and
- **Aerodrome specific operating procedures**, including:
    - reduced visibility operations plan (RVOP), and
    - low visibility operations plan (LVOP).

The visibility specified as the runway level of service is applicable to individual runways and to the taxiways that are used when taxiing to and from the specified runway. In some cases, for reduced and/or low visibility operations, specific taxiways are identified to support the runway level of service.

The runway level of service is published in the *Canada Flight Supplement* (CFS). It may also be published in the *Canada Air Pilot* (CAP) or the *Restricted Canada Air Pilot* (RCAP). In the CFS, CAP and RCAP, the runway level of service is always expressed as runway visual range (RVR) (with corresponding ground visibility, where applicable), even for those runways that are not equipped with RVR sensors. This terminology is used for consistency with the provisions in the CARs and to align with the specific approvals (SAs) that authorize operators to conduct of take-offs and approaches during reduced and low visibility conditions.

If no RVR is published for a specific runway, then the runway and taxi operations are limited to the standard visibility of RVR 2600 (½ SM) and above. An entry of "RVR 1200 (¼ SM)" indicates that the runway meets the requirements for runway and taxi operations below RVR 2600 (½ SM), down to and including RVR 1200 (¼ SM). An entry of "RVR 600" indicates that the runway meets the requirements for runway and taxi operations below RVR 1200 (¼ SM), down to and including RVR 600.

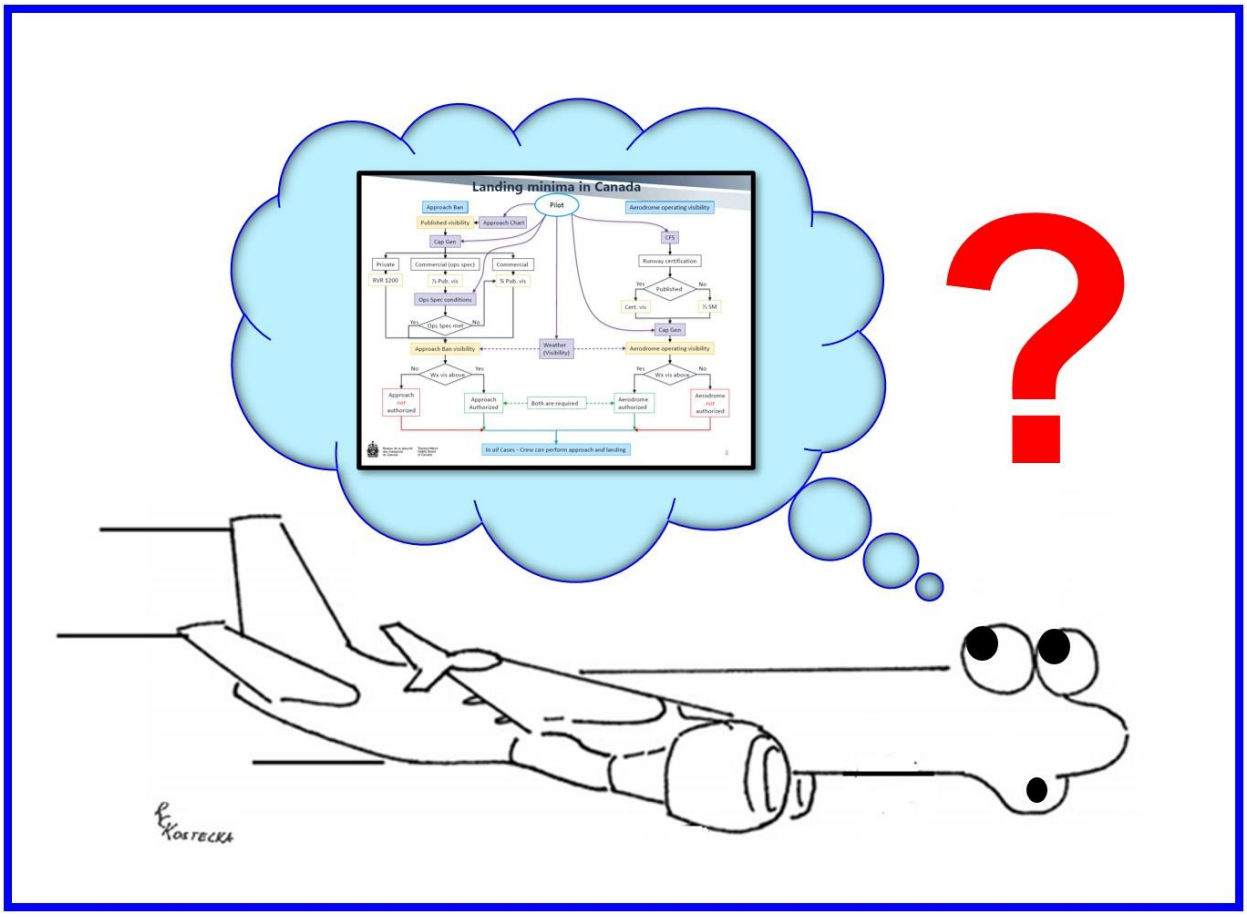
There are specific criteria for determining if the reported visibility meets the runway level of service. These are provided in Advisory Circular (AC) 602-002–*Aerodrome operating visibility* and the *Canada Air Pilot–General* (CAP GEN).

The situation today

As part of Transport Canada's review of the approach ban regulations, a comprehensive review of the visibility requirements for all phases of flight was conducted. During this review, Transport Canada found important opportunities for improvement—applicable to other phases of flight—that also needed to be addressed. Because they are appliable anytime that an aircraft is maneuvering on the aerodrome, runway level of service requirements are of significant importance.

The recommendations from the TSB, as well as feedback from pilots and operators, have helped to identify two principal issues with the current criteria of visibility reports used for runway level of service:

- They are overly complicated. Four sets of visibility report criteria are stipulated; these are dependent upon whether the aircraft is departing or arriving and whether it is at a site with an active air traffic control (ATC) tower. In three cases, there is a prescribed order of reports, and in the fourth case, the most restrictive report is limiting; and
- These criteria (used for runway level of service) do not align with the hierarchy of visibility reports stipulated in the regulations for:
    - take-off (subsection 602.126(2) of the CARs), and
    - approach/landing (sections 602.129, 700.10, 703.41, 704.37 and 705.48 of the CARs).



The undue complexity of visibility requirements that are not aligned has resulted in misunderstanding, increased workload and unnecessary distraction for pilots.
Illustration by Robert Kostecka

To deal with this complexity and to facilitate decision-making, many pilots and operators have resorted to developing elaborate flow charts. This situation is unique to Canada; taking these steps is not necessary for flight operations anywhere else in the world.

The TSB has provided an important recommendation to "review and simplify." The need to do this has also been clearly heard from Canadian pilots and operators.

The way forward

TSB Recommendation A20-01, which directed Transport Canada to "review and simplify operating minima for approaches and landings …," has also compelled Transport Canada to consider the current visibility requirements for all phases of flight.

Transport Canada's goal has been to simplify the regulations and associated procedures so that they will be easy for pilots and operators to understand and apply.

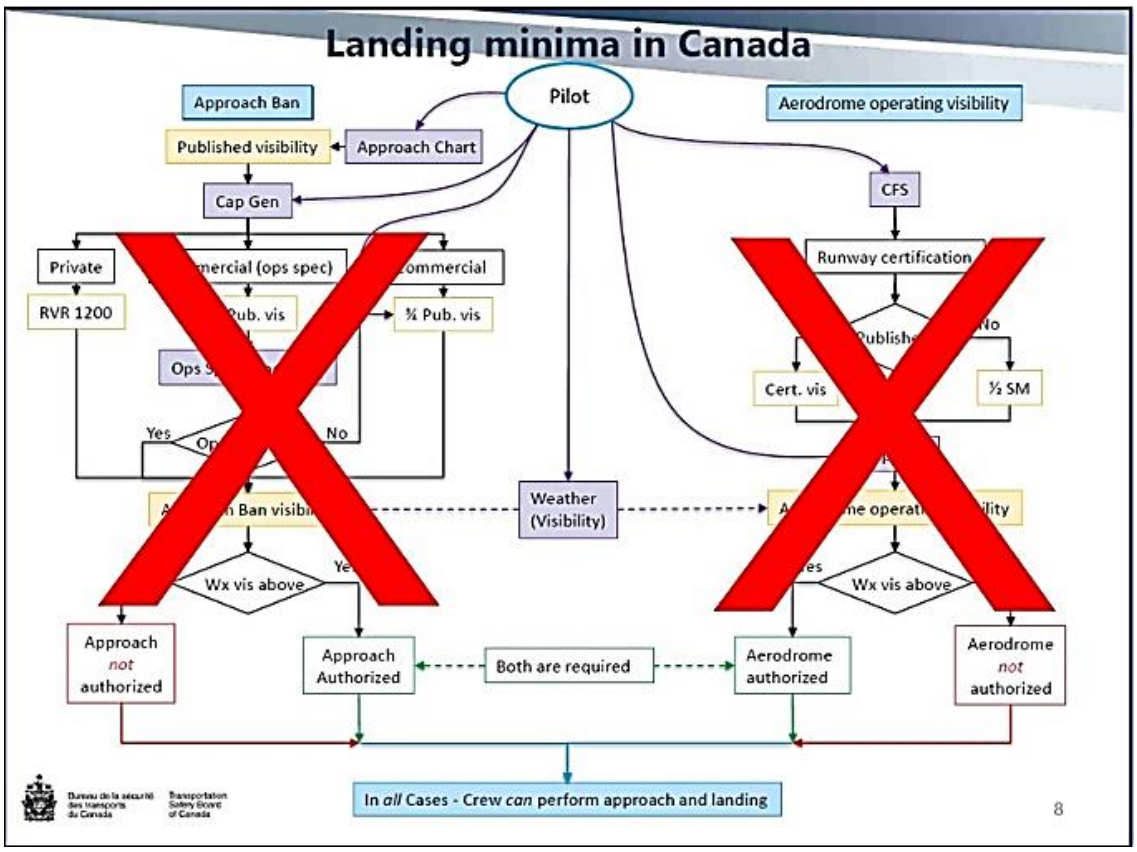
- The hierarchies of visibility for all phases of flight are now being aligned with a simple, consistent priority:
  - RVR,
  - ground visibility, and
  - runway visibility
- This simple, consistent priority is being applied to the new provisions that are being developed to define:
  - the hierarchy of visibility reports specified for take-off in subsection 602.126(2) of the CARs, and
  - the hierarchy of visibility reports specified for approach in section 602.129 of the CARs

    Note: All other provisions respecting approach visibility, including sections 700.10, 703.41, 704.37 and 705.48 of the CARs, are being revoked.

- To further simplify operational decision-making processes for pilots:
  - The hierarchy of visibility reports for departure (i.e., pushback, taxiing prior to take-off and take-off) will utilize hierarchy of visibility reports specified for take-off in subsection 602.126(2) of the CARs;
  - The hierarchy of visibility reports for arrival (i.e., approach/landing and taxiing after landing) will utilize the hierarchy of visibility reports specified for approach in section 602.129 of the CARs; and
  - The instrument design criteria in TP 308 – *Criteria for the Development of Instrument Procedures* have been modified to ensure that the charted visibility published for instrument approaches will be greater than or equal to the runway level of service.

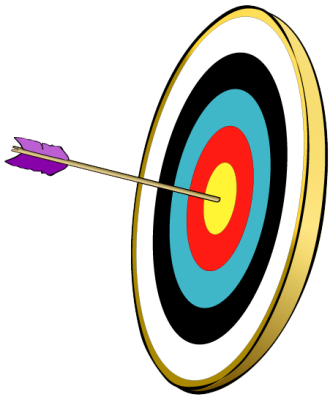
New guidance on runway level of service is also being developed to reflect these new, simplified and aligned requirements. There is much work to be done on this, including updating the CAP GEN, CFS and AC 602-002.

The simplification and alignment being implemented will eliminate the two separate decision-making processes that are currently used to determine the required visibility for the departure and arrival phases.



The simplification and alignment being implemented will eliminate the two separate decision-making processes that are currently used to determine the required visibility for the departure and arrival phases.

Pilots and operators will now have simplified decision-making processes—for both departure and arrival—that are clear, simple and easy to use. △



Supporting the New Approach Ban Regulations: *TP 308 Changes and NAV CANADA Collaboration*

by Reuben Jonker, Inspector, Air Navigation Standards, Civil Aviation, Transport Canada

As we move toward implementation of the new approach ban regulations, NAV CANADA has an indispensable role. This article will explain the important role of NAV CANADA in the collaborative effort to facilitate the introduction of the new regulations. One of their significant contributions is the updating and improving of charted visibility on Canadian instrument approach procedures.

Charted visibility is an important concept that is the focus of the approach ban safety initiative. The safety rationale behind this is explained in *Why We Need to Act Now: The Compelling Safety Case* and *Being Led Down the Garden Path: Understanding the Human Factors Contributing to Low Visibility Approach Accidents*, which also appear in this issue of the *Aviation Safety Letter* (ASL).

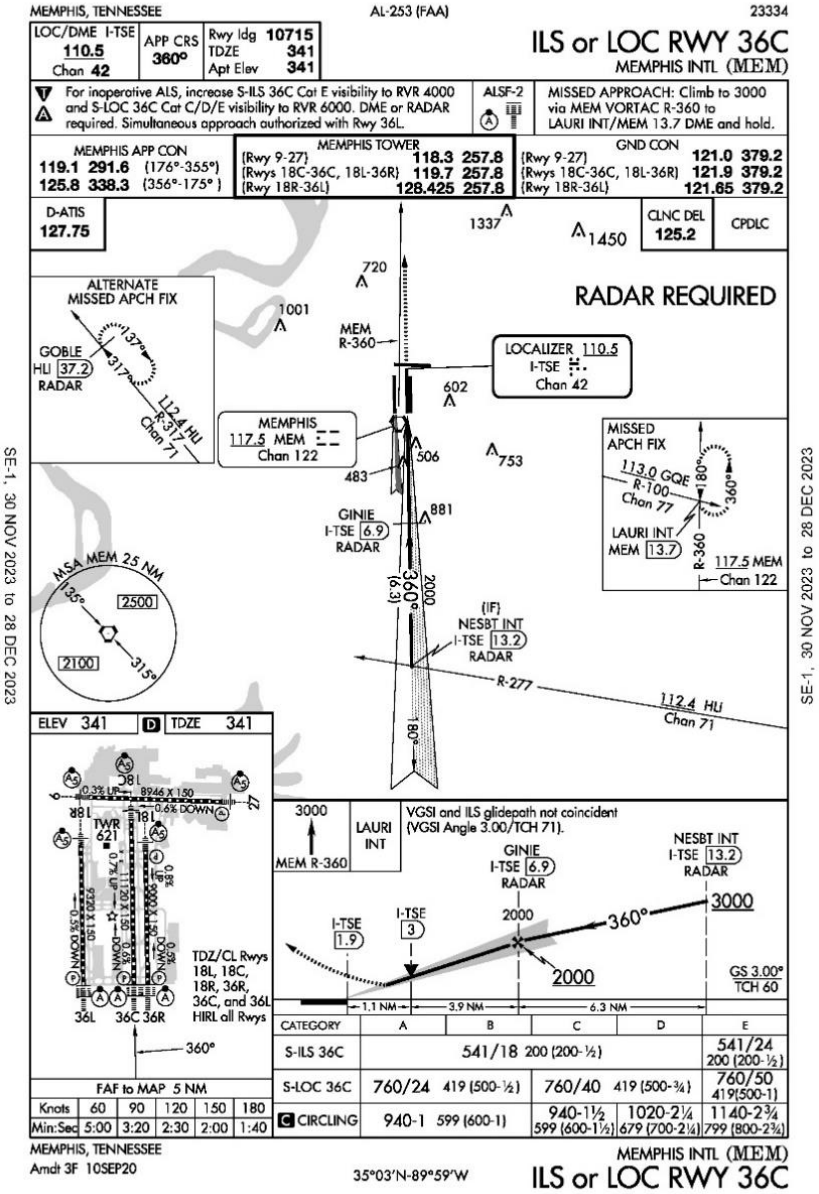
To support the introduction of the new approach ban regulations and a prescriptive charted visibility, Transport Canada has improved the criteria used to determine the charted visibility. These updated criteria more accurately reflect the minimum visibility necessary for the pilot to safely continue the descent (below DA, DH or MDA) to a landing.

These improved criteria are found within the manual entitled *Criteria for the Development of Instrument Procedures* (TP 308) and considers numerous factors of the approach and landing environment in determining the charted visibility. Some of these factors include decision height/height above the touchdown zone elevation, approach type and approach characteristics (e.g., alignment), runway and approach lighting, runway certification and runway level of service.

As Canada's Air Navigation Service Provider, responsibility for updating charted visibilities affected by the new TP 308 criteria resides with NAV CANADA. The charted visibility for each individual instrument approach procedure will need to be assessed by a procedure designer to determine if a change is needed. If an amendment is required, NAV CANADA will need to modify the approach procedure chart to reflect the new visibility value. All of this represents a significant amount of work, and NAV CANADA will be leveraging new procedure design technology to streamline the process.

The new TP 308 criteria also introduces an improvement applicable to CAT I approach procedures to runways that are currently equipped with touchdown zone lighting (TDZL) and runway centreline lighting (CL). Currently, instrument landing system (ILS) and localizer performance with vertical guidance (LPV) approach procedures to CAT I minima have charted visibilities of runway visual range (RVR) 2600. With the new TP 308 criteria, these approach procedures will qualify for a charted visibility minima of RVR 1800 when both TDZL and CL exist for the runway. There are 15 runways, spread across the country, that will benefit from this improvement.

CAT I instrument approach procedures with a charted visibility of RVR 1800—for runways that are equipped with TDZL and CL—will be publicly available (i.e., they will be published in the Canada Air Pilot and will not require specific approval). These new instrument approach procedures will facilitate increased capacity for these runways. This will benefit the aerodrome operators as well as air operators by safely maximizing aerodrome flow, thereby minimizing costly delays (holding fuel, missed connections, etc.). These changes will also bring Canada into alignment with the International Civil Aviation Organization (ICAO) Standards and will harmonize with the other countries, such as the United States, which also have CAT I instrument approach procedures with RVR 1800.



Instrument approach procedure courtesy of United States Federal Aviation Administration

NOT FOR NAVIGATION

In addition, there are other instrument approach procedures that will provide additional operational flexibility. These are described in the article *Looking to the Future: Enhanced Flight Vision Systems and Other New Technologies Enabling All-Weather Operations*, which also appears in this issue of the ASL.

Transport Canada and NAV CANADA share the goal of having as many approach procedures assessed—and amended, if necessary—by the time the new regulations come into force. Transport Canada has suggested that priority be given to the approach procedures serving the 15 runways having both TDZL and CL to allow for the public use of these instrument approach procedures.

By working collaboratively, Transport Canada and NAV CANADA are striving to ensure an efficient and seamless implementation of this important safety initiative. △

Reuben Jonker is an inspector in Air Navigation Standards with a focus on aeronautical information and flight procedure design. He holds an Airline Transport Pilot Licence. Prior to his time at Transport Canada, Reuben worked 18 years at NAV CANADA as a flight procedure designer. He is a graduate of the University of Waterloo, recipient of a Governor General's Academic Medal, and twice national winner of NAV CANADA's President's Award for Outstanding Achievement.

Looking to the Future: *Enhanced Flight Vision Systems and Other New Technologies Enabling All-Weather Operations*

by Benoit Saulnier, Program Manager, Commercial Flight Standards Division, Civil Aviation, Transport Canada

The concept of all-weather operations saw its earliest beginnings in the late 1920s, as various aviation innovators sought to enable aircraft to take-off and land under instrument meteorological conditions (IMC). This work gave birth to the instrument landing system (ILS), now widely used as one of the key types of navigation aids for instrument approach procedures. This work was largely expanded in the 1970s with the development of Category II (CAT II) and Category III (CAT III) ILS and automatic landing systems, enabling very low or no decision heights for these instrument approach procedures.

Lieutenant James H. Doolittle, Air Corps, United States Army, in rear cockpit of the Consolidated NY-2 Husky, NX7918, a trainer equipped with experimental flight instruments (Source: National Air and Space Museum, Smithsonian Institution (SI 79-9405)).

Modern technology such as infrared-based enhanced flight vision systems (EFVS) or computer-based synthetic vision guidance systems (SVGS) are allowing us to re-think how all-weather operations are being approached, allowing a transition from a paradigm which is based on designing systems so that the visual references on an instrument approach are not

needed to complete a landing, to a paradigm where we can find new ways of meeting the requirement to acquire visual references on an instrument approach.

New technology: Enhanced flight vision systems

An EFVS is a system which uses an infrared sensor installed on the nose of the aircraft, capturing an infrared image of the external scene ahead of the aircraft. This image is then displayed to the pilot using a head-up display (HUD) or an equivalent display. The advantage of the infrared sensors used by the EFVS is that, under many types of weather conditions, it can provide a view of the external scene using thermal contrast, where the naked eye is not able to do so due to an obscuring phenomenon (i.e., cloud, fog, snow, etc.).

Figure 2: EFVS image displayed on an aeroplane's HUD (Proprietary to CAE Inc. © CAE Inc. 2024)

Therefore, aircraft equipped with a certified EFVS can use this system to acquire the visual references needed by the pilots to continue an instrument approach beyond the decision altitude or decision height. In many cases, EFVS are also assigned an enhanced visibility factor, allowing civil aviation authorities to provide an operational credit (i.e., a reduction of the minimum visibility required to conduct an instrument approach) based on that enhanced

visibility factor. EFVS systems have now been used safely in the U.S. and in Europe for over a decade, enabling more operational flexibility and accessibility to aerodromes during reduced and low-visibility conditions.

What other technologies can be used?

EFVS have so far been prevalent on large cabin business jets but are still seeing very limited use on other types of aircraft. However, there are other types of technologies in use with a larger number of aircraft. Technologies such as HUD, synthetic vision systems and auto-land systems can also be used to improve access to airports during reduced or low visibility operations. As opposed to an EFVS, where the system is used as an alternative to acquiring the visual references required to enter into the visual segment of an instrument approach, the above systems allow to extend the instrument segment to lower decision altitudes or decision heights. While this is already being done on Category II and III ILS approaches, these technologies are now being used to enable new types of instrument approach procedures with lower decision heights and required visibility values. These new types of procedures such as Specific Approval (SA) CAT I and SA CAT II have been very successfully introduced by the U.S. Federal Aviation Administration (FAA) and in other parts of the world. One of the key advantages of these procedures is that they allow instrument approach procedures to be flown to approach minima that are lower than standard Category I precision approach minima, but to runways that may not have all the expensive ground infrastructure that is typically required for CAT II and CAT III ILS operations.

Figure 3: Combined vision system image which combines elements of EFVS and synthetic vision system (Proprietary to CAE Inc. © CAE Inc. 2024).

The reduced ground infrastructure is then mitigated by these more advanced aircraft systems such as HUD, synthetic vision guidance systems and auto-land systems. This concept of using aircraft equipment to enable lower approach minima is also referred to as performance-based aerodrome operating minima.

How is Transport Canada facilitating this transition?

The approach ban safety initiative is an excellent opportunity to take stock of the ways in which other civil aviation authorities have safely introduced new systems and types of instrument approach procedures to improve access to aerodromes under all-weather operations. The success in implementing these systems and procedures in the U.S. and in Europe is largely driven by the data-based approach which drove their introduction, and this is something that Transport Canada (TC) builds on to introduce these into the Canadian framework.

Figure 4: HUD system such as those which can be used for SA CAT I ILS approach procedures (Source: Bombardier Inc.).

For EFVS operations, TC is working on a global exemption to the *Canadian Aviation Regulations* (CARs), which will enable EFVS operations in the short term while work continues on the approach ban safety initiative. This global exemption will be designed to enable air operators and private operators to conduct EFVS operations in Canada.

Provisions will also be added to the regulatory amendments developed under the approach ban safety initiative, which would codify the requirements for the conduct of EFVS operations in Canada into the CARs. With regards to the other new procedures, such as SA CAT I and SA CAT II, TC is also working towards the introduction of these new types of instrument approach procedures. While the new instrument approach criteria, which will be published in *The Criteria for Instrument Procedure Development* (TP 308) Change 9, will introduce some changes to how approach visibility minima are applied by pilots, these new types of procedures are intended to facilitate continued access to airports such as Ottawa, Edmonton and Québec City, which do not have Category II or III ILS approaches. The use of these new instrument approach procedures, along with use of EFVS, will require a specific approval/special authorization.

In closing, the introduction of EFVS and other new technologies enabling lower approach minima will greatly improve the operational flexibility of operators and ensure the continued improvement to the ability of pilots to land safely at aerodromes in poorer visibility conditions. Additionally, while these systems and procedures will initially provide the greatest advantage at larger airports, the installation of EFVS systems on a wider range of aircraft as the technology becomes more mature may also improve access to aerodromes in more remote parts of the country, and with sensor technology continuing to improve, this is only the beginning. △

Benoit Saulnier is a Program Manager with the Commercial Flight Standards Division. With a total of 4 500 hours of flying time, Benoit holds type ratings on the Airbus A320, Bombardier Global Express, Dash 8 – Q400 and Beech 1900. He has also instructed on a wide range of aircraft types. In his work at TC, Benoit oversees the development of regulations, standards and guidance material pertaining commercial flight operations, including the development of regulations and guidance for EFVS and other emerging technologies.

Answers to Stakeholder Questions About Aerodrome Operations and the Approach Ban Safety Initiative

by Angus Gauld, Program Manager, Aerodrome Standards, Civil Aviation, Transport Canada;
by Jerome Iltis, Inspector, Aerodrome Standards, Civil Aviation, Transport Canada; and
by Robert Kostecka, Inspector, Flight Standards, Civil Aviation, Transport Canada

During the ongoing consultation for the approach ban safety initiative, there have been several excellent questions asked about the potential impact on aerodrome operations. These questions have come from both airport operators and air operators.

This article will provide answers to some of the questions that we've already received. We hope that it will also encourage stakeholders to provide their questions and comments through the Canadian Aviation Regulation Advisory Council process described in the article *Canadian Stakeholders Have a Voice: Understanding the Consultation Process*.

1. **Will the new approach ban regulations have an impact on reduced visibility operations or low visibility operations? Will RVOP and LVOP be changing?**

   The upcoming changes to the approach ban regulations will not result in any changes to the existing requirements for reduced and low visibility operations; the infrastructure and procedural requirements in TP 312 that are based on RVR 2600 (½ SM) and RVR 1200 (¼ SM) will not change:

   - All of the infrastructure requirements that TP 312 specifies for operations below RVR 2600 (½ SM) will still be required, and all of the infrastructure requirements that TP 312 specifies for operations below RVR 1200 (¼ SM) will still be required.
   - As per TP 312, 8.6.1.2, a reduced-visibility operations plan (RVOP) will still be required at an aerodrome operating in visibility conditions below RVR 2600 (½ SM), down to RVR 1200 (¼ SM); and, as per TP 312, 8.6.1.1, a low-visibility operations plan (LVOP) will still be required at an aerodrome operating in visibility conditions below RVR 1200 (¼ SM), down to RVR 600.
   - As per TP 312, Introduction, at locations where aircraft operations occur below a visibility value of RVR 2600 (½ SM), the implementation of a Surface Movement and Guidance Control System (SMGCS) or Advanced Surface Movement and Guidance Control System (A-SMGCS) will still need to be considered as part of the Reduced/Low Visibility Operations Plan.

The proposed changes to the approach ban regulations would not result in any changes to the existing requirements for reduced and low visibility operations; the infrastructure and procedural requirements that are based on RVR 2600 (½ SM) and RVR 1200 (¼ SM) will not change.
Source : Clifford Mass

2. With the latest amendment to TP 308, will the charted visibility increase, decrease or remain the same?

The determination of charted visibility for an individual instrument approach procedure is based on the criteria contained in TP 308. These criteria are detailed in the article *Supporting the New Approach Ban Regulations: TP 308 Changes and NAV CANADA Collaboration*, which also appears in this issue of the *Aviation Safety Letter* (ASL).

Transport Canada has reviewed a selection of sites using the new TP 308 criteria to determine how charted visibilities will be affected. In many cases, the new charted visibility value was found to remain the same as the value currently published. In other cases, the new charted visibility value was found to decrease compared to the current visibility value. Only one case was found where the new charted visibility value was greater than the current visibility value.

3. The minimum charted visibility for CAT I instrument approach procedures (for runways equipped with centreline lights and touchdown zone lighting) will now be as low as "½ SM or RVR 1800." Does this mean that ½ SM will now be considered to be equivalent to RVR 1800?

No; there will be no change to the existing statute mile/RVR equivalency; i.e., ½ SM will still be considered equivalent to RVR 2600.

As explained in the answer to Question 1, because the visibility/RVR equivalence is not changing, the infrastructure and procedural requirements that are based on RVR 2600 (½ SM) and RVR 1200 (¼ SM) will not change.

Additional information about CAT I instrument approach procedures with RVR 1800 can be found in the article *Supporting the New Approach Ban Regulations: TP 308 Changes and NAV CANADA Collaboration*, which also appears in this issue of the ASL.

4. Will the introduction of CAT I instrument approach procedures with charted visibility as low as "½ SM or RVR 1800" (for runways with touchdown zone and centreline lighting) impose any new infrastructure requirements on airport or aerodrome operators?

No; the introduction of CAT I approaches with charted visibility minima of RVR 1800 will not create any new requirements for aerodrome infrastructure and will not impose any new costs for aerodrome operators:

- The latest changes to instrument approach design criteria in TP 308 will enable runways that *already have* centreline lighting (CL) and touchdown zone lighting (TDZL) to support CAT I instrument approach procedures with a minimum visibility of RVR 1800.
- There will be no change required for those runways that do not have TDZL and CL. These runways will continue to support Cat I instrument approach procedures with a minimum charted visibility of "½ SM (RVR 2600)."
- Aerodrome operators will continue to have the option of *choosing* to install CL and TDZL, should they wish to do so.

5. **What additional information will be available for aerodrome operators?**

   While there will be no change to RVOP or LVOP requirements, Aerodrome Standards is undertaking a review of the associated guidance that is available in Advisory Circular (AC) 302-001–*Publication of the Level of Service with Respect to Departure Below RVR 2600 (½ Statute Mile)* and AC 302-006–*Publication of Special Reduced/Low Visibility Procedures in the Appropriate Aeronautical Information Publication(s).* The goal of this review is to:

   - determine if there are opportunities to improve the readability of the information;
   - provide additional background information; and
   - combine both documents into a single comprehensive AC.

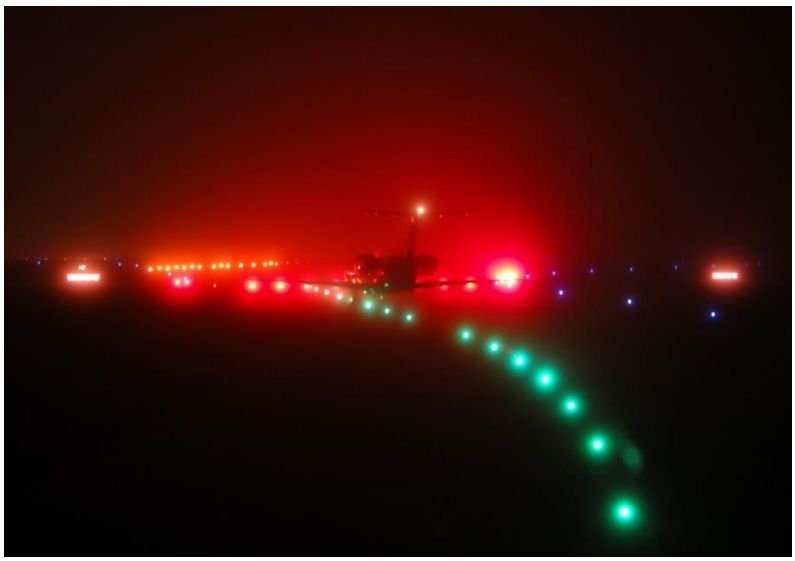
Additional questions and comments

Additional questions and comments on how this important safety initiative will affect aerodrome operations are most welcome.

To learn more about how you can provide feedback, please see *Canadian Stakeholders Have a Voice: Understanding the Consultation Process* and *Summing Up and Moving Forward*, which also appear in this issue of the ASL. △

Angus Gauld joined Transport Canada after an extensive flying career, including various single-engine operational roles and 20 years as an IFR Helicopter EMS Captain, flying Sikorsky 76 and Leonardo 139 aircraft. He holds a Certificate in Air Transport Management.

Jerome Iltis is an inspector in Aerodrome Standards and represents Canada at several ICAO working groups. He holds an Airline Transport Pilot licence for fixed-wing aircraft. He served as a PIC for subpart 703 air operators conducting IFR operations in multi-engine aircraft and was a flight instructor. Jerome has a diploma as a paralegal as well as 10 years experience researching and analyzing the application of Canadian provincial legislation.



Credit: Mathieu Neuforge via picsfromtheoffice.blogspot.com

Canadian Stakeholders Have a Voice: *Understanding the Consultation Process*

by Leah Godin, Senior Regulatory Development Analyst, Civil Aviation Safety Regulatory Affairs Branch, Transport Canada

Canada is a democracy, and Canadians have an important role to play in the rulemaking process. It is in all our best interests to take an active role and participate where and when we can. Each of our unique voices can contribute perspective, knowledge and experience of what it means to call Canada home.

To better understand how your voice can be heard and how you can contribute to the development of the policies, rules and outcomes in Canada's civil aviation sector, this article will outline:

- the key players in aviation rulemaking in Canada;
- an overview of how the Canadian Aviation Regulation Advisory Council (CARAC) is managed and how it functions on a day-to-day basis; and
- how you can contribute to important aviation regulatory initiatives that are led by Transport Canada Civil Aviation (TCCA).

Canadian Parliament building, Centre Block,
Credit: Saffron Blaze via Wikipedia

Key Players

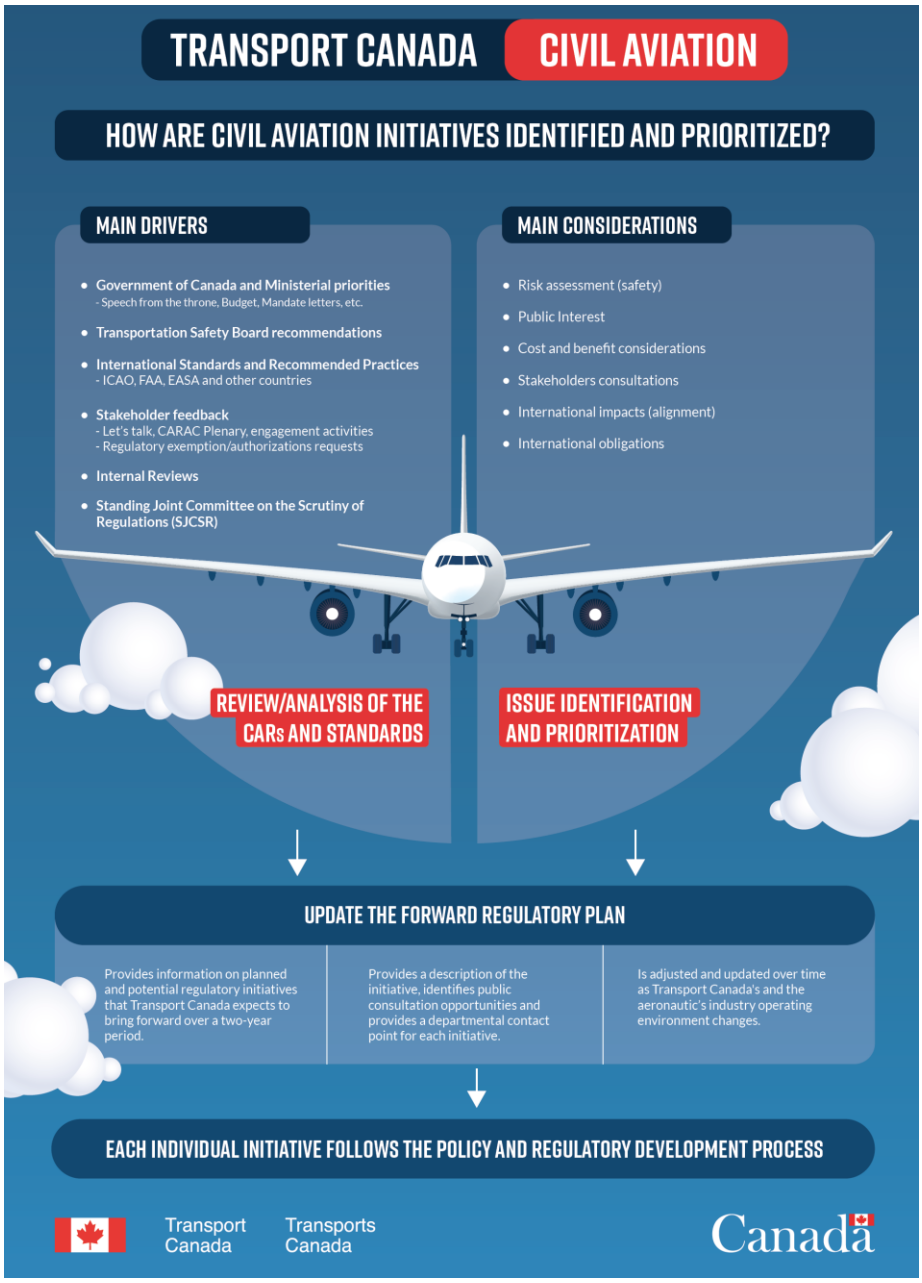
There are many, many contributors to a new standard or regulation being made (click here to see an infographic outlining both the legislative and the regulatory process in Canada). This article will focus on the individuals and institutions that are required to make a change to the Canadian Aviation Regulations (CARs), such as the amendments that are proposed in the approach ban regulatory safety initiative.

The federal institutions, such as Transport Canada, follow the Cabinet Directive on Regulation, which sets out the Government of Canada's expectations and requirements in the development, management and review of federal regulations. TCCA obeys the requirements listed in the Cabinet Directive on Regulation as a minimum standard.

There are many reasons why a regulatory change might be required; drivers for regulatory change led by TCCA are identified in the CARAC prioritization infographic.

Once the TCCA Safety Regulatory Affairs Branch is engaged, the following work has already been completed by policy and technical specialists:

- The issue that has been identified is clearly understood, well-researched, and a reasonable policy direction has been proposed; and
- The appropriate degree of stakeholder engagement has been identified[1].



CARAC prioritization infographic

[1] This is accomplished through the completion of a Preliminary Issue and Consultation Assessment (PICA), which contains information on the scope and risk associated with the identified issue.

The TCCA Safety Regulatory Affairs Branch assigns a regulatory analyst who shepherds the file through the regulatory process with the collaboration of numerous specialists in TCCA. One of their first tasks is to engage the CARAC membership by publishing a Notice of Proposed Amendments (NPA) online. The NPA must include:

- the rationale for the proposed change;
- a list or description of the proposed amendments, with a description of how they would solve the issue; and
- the risk associated with the proposed solution and the potential cost to stakeholders and/or the Canadian public.

Comments received from stakeholders in response to the NPA are analyzed; each comment or question is considered by TCCA subject matter experts, and an appropriate response is carefully determined by a combination of research and discussions with both internal and external specialists and stakeholders.

Once issues raised at the NPA stage have been resolved (either through stakeholder engagement to mutual satisfaction or through TCCA consideration and acknowledgement of any residual risk), the Civil Aviation Safety Regulatory Affairs analyst prepares the draft regulations for pre-publication in the Canada Gazette, Part I. This preparation involves internal and external coordination and includes but is not limited to:

- completing a Regulatory Impact Analysis Statement (RIAS) that must be approved by Treasury Board of Canada Secretariat (TBS). The RIAS contains a cost–benefit analysis that must detail and explain the anticipated financial impact, along with the benefits that would result from the regulatory initiative.
- working with the Department of Justice (DoJ) on effective proposed regulatory text. The DoJ checks that the proposed text meets the bilingual and bi-jurisdictional requirements so that the regulations are effective in English and French and in both Canadian common-law and civil-law systems.
- ensuring that stakeholder comments and feedback have been considered, addressed and integrated into the new proposed rules where possible.

The draft regulations are then pre-published for public consideration consultation in the *Canada Gazette*, Part I. Stakeholders are able to see and comment on the draft regulatory text along with the RIAS, which explains how public feedback has been incorporated into the proposed regulatory changes.

The feedback received from the pre-publication in the *Canada Gazette*, Part I is dispositioned, and TCCA experts work with stakeholders to resolve any remaining issues. At this point in the process, preparation for publication in the *Canada Gazette*, Part II begins[2].

The entire proposal must be reviewed and approved again by the DoJ and TBS (with any changes from pre-publication explained and justified). Before publication in the *Canada Gazette*, Part II, the Minister of Transport must approve and recommend that TBS consider the regulatory proposal. The regulatory proposal is considered by TBS and, if approved, the Governor in Council will review and approve the making of the final regulations.

[2] Unless there are impactful issues that are not resolved: if a shift in policy direction is required, the process is paused. In some cases, the process may return to the NPA phase, with a revised proposal for stakeholders to consider, before pre-publishing the new proposal in the *Canada Gazette*, Part I.

Finally, the Standing Joint Committee for the Scrutiny of Regulations continuously reviews and scrutinizes government regulations and other statutory instruments.

CARAC

The CARAC is a group focused on creating and updating the CARs and Canadian standards. The group is a joint effort between Transport Canada and Canada's aviation industry. The CARAC is managed by the TCCA Civil Aviation Safety Regulatory Operations Division, with the goal to inform interested members of the public and to connect aviation stakeholders with TCCA.

On a weekly basis, the Regulatory Operations Division updates the CARAC membership on consultations that are underway. They organize informational and participatory events, such as the 2023 CARAC Plenary in November.

Your Contribution

TC's 2023-2024 Departmental Plan includes a commitment by TCCA to meaningfully engage stakeholders while working towards modernizing the CARs. This means engagement early in the regulatory process to signal check a proposed change to key stakeholders. This also means ensuring that voices from marginalized/racialized/ impoverished communities are also not only heard but encouraged to participate. In June 2021, the United Nations Declaration on the Rights of Indigenous Peoples Act came into force. This legislation requires that departments not only actively consider the impact of regulatory proposals on these communities, but that they also engage with Indigenous peoples on matters that affect them and look for ways to work together to improve outcomes for everyone.

Get involved

- Join the CARAC membership and stay informed on matters that interest or impact you.
- Email your questions and comments to TC.CARConsultations-RACConsultations.TC@tc.gc.ca.
- Comment on NPAs that are available online.
- Comment on draft regulations that are pre-published in the *Canada Gazette*, Part I.
- Voice your opinion about matters that impact you and your communities.

Most importantly–stay safe △

Leah Godin is a Senior Regulatory Development Analyst in the Civil Aviation Safety Regulatory Affairs Branch. Leah holds a Master's Degree in Public Policy, Public Administration and Public Law and has 15 years of service with Transport Canada Civil Aviation.

Summing Up and Moving Forward

by Andy Cook, Associate Director General, Transport Canada, Civil Aviation

We hope that you have found this special issue of the *Aviation Safety Letter* (ASL) to be interesting and informative.

In closing, we'd like to recap the information that has been shared here, especially the compelling safety issues that have been identified and what Transport Canada is doing to address them. We'd also like to take this opportunity to encourage members of the Canadian aviation community, and other stakeholders, to participate in the regulatory process by sharing your comments, suggestions and questions through the Canadian Aviation Regulations Advisory Council (CARAC).

Summing up

All aviation professionals know that safety must always be our primary concern. They also know that the ongoing effective mitigation of risk is essential for flight operations to be conducted safely. With respect to the visibility requirements for instrument approach procedures, change is needed to ensure that Canadian regulations will effectively manage risk and will be consistent those in the rest of the world.

The first two articles of this issue discuss the numerous accidents that have occurred when the reported visibility was less than the charted visibility for the instrument approach procedure being conducted. The analysis of these accidents—and the human factors that underlie them—make clear that instrument approaches conducted with these visibility conditions carry an increased level of risk.

This issue also includes information on how runway level of service requirements will be simplified, the vitally important role played by NAV CANADA, as well as the new technologies and other improvements that will benefit the Canadian aviation community. In addition, it provides answers to stakeholder questions about aerodrome operations and the approach ban safety initiative.

Moving forward

Keeping the Canadian aviation community informed, obtaining stakeholder feedback and answering stakeholder questions are necessary steps to ensure that the proposed regulations effectively manage risks in a manner that supports the diverse needs of Canada's aviation industry. These efforts are well underway, and they will continue.

For example, in 2023, the approach ban safety initiative team provided national information sessions—that were open to anyone interested—in English (September 6) and French (October 4). The team also had numerous meetings with air operator associations, an airport association, as well as a wide range of individual air operators, from Canada's largest airlines to our smaller regional carriers.

These outreach efforts will continue; the approach ban safety team is planning another national teleconference as we approach pre-publication of the draft regulations in the *Canada Gazette*, Part I. We are also planning additional meetings with stakeholders.

Having the ability to provide feedback during the regulatory development process is the right of every Canadian, and stakeholders are strongly encouraged to submit their comments, suggestions and questions through the CARAC.

All stakeholder feedback is considered. Input from stakeholders has produced—and continues to produce—important results that our team will be sharing during our next national teleconference.

We are moving forward to improve safety—and we are listening! △

Submission of Aviation Safety Letter (ASL) articles

Do you have an aviation safety topic you are passionate about? Do you want to share your expert knowledge with others? If so, we would love to hear from you!

Credit: iStock

General information and guidance

The ASL's primary objective is to promote aviation safety. It includes articles that address aviation safety from all perspectives, such as safety insight derived from accidents and incidents, as well as safety information tailored to the needs of all holders of a valid Canadian pilot licence or permit, to all holders of a valid Canadian aircraft maintenance engineer (AME) licence and to other interested individuals within the aviation community.

If you are interested in writing an article, please send it by e-mail to TC.ASL-SAN.TC@tc.gc.ca in your preferred language. Please note that all articles will be edited and translated by the Transport Canada Civil Aviation (TCCA) Aviation Terminology Standardization Division and will be coordinated by the ASL team.

Photos

In order to captivate our readers' interest, we recommend that you include one or two photos (i.e., photo, illustration, chart or graphic) for each article, if possible. Please send us your photos as an e-mail attachment (preferably as a jpeg).

We look forward to receiving your articles. △