TSB Recommendation A07-05

Landing distance considerations

The Transportation Safety Board of Canada recommends that the Department of Transport and other civil aviation authorities require crews to establish the margin of error between landing distance available and landing distance required before conducting an approach into deteriorating weather.

Air transportation safety investigation report	A05H0002
Date the recommendation was issued	12 December 2007
Date of the latest response	September 2024
Date of the latest assessment	March 2025
Rating of the latest response	Unsatisfactory
File status	Active

Summary of the occurrence

On 02 August 2005, the Air France Airbus A340-313 aircraft (registration F-GLZQ, serial number 0289) departed Paris, France, at 1153 Coordinated Universal Time (UTC) as Air France Flight 358 on a scheduled flight to Toronto, Ontario, with 297 passengers and 12 crew members on board. Before departure, the flight crew members obtained their arrival weather forecast, which included the possibility of thunderstorms. On final approach, they were advised that the crew of an aircraft landing ahead of them had reported poor braking action, and Air France Flight 358's aircraft weather radar was displaying heavy precipitation encroaching on the runway from the northwest. At about 200 feet above the runway threshold, while on the instrument landing system approach to Runway 24L with autopilot and autothrust disconnected, the aircraft deviated above the glideslope and the groundspeed began to increase. The aircraft crossed the runway threshold about 40 feet above the glideslope.

During the flare, the aircraft travelled through an area of heavy rain, and visual contact with the runway environment was significantly reduced. The aircraft touched down about 3800 feet down the 9000-foot runway; it was not able to stop on the runway and departed the far end at a groundspeed of about 80 knots. The aircraft stopped in a ravine at 2002 UTC (1602 eastern daylight time) and caught fire. All passengers and crew members were able to evacuate the

aircraft before the fire reached the escape routes. A total of 2 crew members and 10 passengers were seriously injured during the crash and the ensuing evacuation.

The Board concluded its investigation and released report A05H0002 on 12 December 2007.

Rationale for the recommendation

The report established that the crew was not aware of the landing distance required to land safely on a contaminated runway. This was due in part to some ambiguities in the landing distance information provided to the crew and an absence of direction by Air France regarding the need for crews to determine landing distances required.

In the latter portions of the approach, the crew actions indicate a concern regarding landing distance when faced with landing on Runway 24L. There is no indication that they had calculated the landing distances required for the arrival, nor are there any direct and specific Air France procedures that would require such calculations by the crew.

This accident shows the need for pilots to know the landing distance required by their aircraft for the conditions to be encountered at the expected time of landing, and to compare this figure to the length of the runway assigned for the landing. It is essential that both figures be known to enable crews to calculate the margin of error available so that they are better prepared to make the correct decision when they encounter deteriorating conditions. In this occurrence, the crew members realized at some time during the landing sequence that the landing was going to be long. Had they known that the margin for error was slim, or indeed non-existent, the crew would likely have executed a go-around.

In the absence of knowledge of the required landing distance under varying performance conditions, crews will not be aware of rapidly developing overrun situations. Because of this, the Board found there is a high potential that crews will make inadequate go/no-go decisions, thereby increasing the risk of damage to persons, property, and the environment.

Therefore, the Board recommended that

> the Department of Transport and other civil aviation authorities require crews to establish the margin of error between landing distance available and landing distance required before conducting an approach into deteriorating weather.
>
> **TSB Recommendation A07-05**

Previous responses and assessments

February 2008: response from Transport Canada

In its response to this recommendation, Transport Canada (TC) states that, subsequent to the 1992 Final Report of the Commission of Inquiry into the Air Ontario Crash at Dryden, Ontario, it conducted extensive research and testing on winter runway surfaces. Through the Civil Aviation Regulation Advisory Council (CARAC), three working groups were convened and six Notices of Proposed Amendment (NPAs) regarding aeroplane performance on wet and

contaminated runways were approved. None of the proposed amendments have come into force as of yet, as they continue to undergo regulatory review with the Department of Justice.

TC is of the opinion that, once in force, the NPAs will accomplish the following:

1. There will be a new CAR Subpart 705 regulation, requiring the Pilot-In-Command (PIC) to determine that sufficient landing distance is available prior to conducting an approach to land, taking into consideration the condition of the runway surface.
2. CAR Subpart 725 standards will be amended to include an information note concerning Aeroplane Flight Manual (AFM) landing performance on dry, wet and contaminated runways that states:

"Refer to guidance material on the determination of dry, wet and contaminated runway landing performance data. Achieving the Aeroplane Flight Manual landing distance on a dry runway is not likely attainable in operational service. Published landing distance data on wet or contaminated runways may need to be adjusted to account for operational variables"

- the definition of "runway" as it pertains to this division,
- takeoff and landing performance on a dry runway,
- takeoff and landing performance on a damp runway,
- takeoff and landing performance on a wet runway, and
- landing performance on a contaminated runway.

3. CAR Section 705.61 Dispatch Limitations: Wet Runway - Turbo-jet-powered Aeroplanes, is currently meant to apply to paved, hard-surfaced runways (i.e. asphalt and concrete). This regulation will be amended to indicate that it applies to:
    - both wet and contaminated runways,
    - paved hard-surfaced runways (i.e. asphalt and concrete), and
    - all turbine powered (turbo-jet and turbo-prop) aeroplanes operated under CAR 705.

In summary, when these amendments to the CARs come into force, CAR 705 air operators and their flight crews will be required to determine that sufficient landing distance is available prior to conducting an approach to land, taking into consideration the condition of the runway surface (dry, damp, wet, or contaminated) resulting from deteriorating weather.

September 2008: TSB assessment of the response (Satisfactory Intent)

The Board is confident that the proposed NPAs described above will, if approved, substantially reduce or eliminate the safety deficiency. However, to date, the action has not been sufficiently advanced to reduce the risks to transportation safety. The proposed NPA regulation work has been ongoing for a number of years, but it is unknown when these NPAs may be approved, or whether there may be significant changes before they come into force. The Board was looking for a more aggressive attention to this deficiency, as a number of recent runway overruns such as the one involving One-Two-Go flight 269 in Phuket, Thailand, on 16 September 2007, are a clear indication that runway overruns from contaminated runways will continue to recur, unless crews know exactly what their margin for error is.

Therefore, TC's response to Recommendation A07-05 is assessed as **Satisfactory Intent**.

February 2010: response from Transport Canada

TC's response states that the CARAC consultation process is complete. Meanwhile, TC continues to review this file while awaiting pre-publication in the *Canada Gazette*, Part I under Department of Justice, Regulatory Unit File #10000-396.

July 2010: TSB assessment of the response (Satisfactory Intent)

The issue of landing accidents and runway overruns is on the Board's Watchlist. The Board is disappointed by the lack of information contained in TC's latest response. Instead it reminds the Board that its NPAs, first proposed in 1999, remain under review by the Department of Justice. In its assessment of TC's 21 February 2008 response, the Board called for TC to take a more aggressive approach in order to mitigate the risks associated with this deficiency. Unfortunately, TC's latest response is silent on any short term solution to assist pilots to make better landing decisions in deteriorating weather conditions. The Board believes that unless TC develops a short term component to its action plan, to mitigate the risks associated with this deficiency, the potential for runway overruns in deteriorating weather will continue.

If adopted, the planned action may result in a course of action that would, in the long term, reduce or eliminate the deficiency identified in Board Recommendation A07-05.

Therefore, assessment of TC's response remains **Satisfactory Intent**.

January 2011: response from Transport Canada

TC advises that its CARAC consultation is complete and that the file containing TC's proposed regulatory changes associated with Recommendation A07-05 is currently under review with the Department of Justice (Regulatory Unit File #10000-396). Such a review of proposed amendments is always necessary to ensure they are sustainable for industry, meet the safety objectives and are still current especially when there is a lapse of time between consultation and drafting. Once the review is complete, the drafting of the rules will progress through the *Canada Gazette* stage.

March 2011: TSB assessment of the response (Satisfactory Intent)

The Board continues to be disappointed regarding the slow progress of implementation of the NPA action needed to assist pilots in making better landing decisions in deteriorating weather conditions. If adopted, the planned action will, in the long term, reduce or eliminate the deficiency identified in Board Recommendation A07-05.

Therefore, assessment of TC's response remains **Satisfactory Intent**.

May and September 2011: response from Transport Canada

May 2011

To address infrastructure issues TC is:

- Actively participating in the ICAO Aerodrome Panel and Aerodrome Design Working Group.
- Revising TP 312. RESA requirements are being addressed within the context of this exercise.
- Nearing completion of drafting regulations specifying winter maintenance standards with the aim of publication in the Canada Gazette by September 2010 (sic).
- Risk assessment and cost benefit analysis activities have been imitated relating to Code 4 runways to compare 150 & 300 metre RESA benefits.

To prevent landing and runway-overrun accidents, TC has:

- TC is an active participant in the ICAO International Runway Friction Task Force and is currently engaged in its fifth meeting to help establish and identify where friction standards can be improved.
- Requirements are in place since 2006 for landings in low visibility conditions
- Issued guidelines for pilots and developing a number of regulatory amendments to help pilots with decision-making when flying in poor weather
- Published an Advisory and an Aviation Safety Letter article targeting airline operators
- Continued active participation in the ICAO Air Navigation Commission where the requirements for additional regulations are analyzed in an international context. This work will ensure that Transport Canada's requirements are harmonized with international requirements.
- TC is drafting a working paper on "Runway Safety", for the upcoming ICAO assembly. The paper will address both incursions and excursions.

Additional details and information relating to this recommendation may be found in a letter to the TSB Board Dated May 02, 2011.

September 2011

NPAs associated with Recommendation A07-05 elevated to the Transport Canada list of regulatory priorities.

CARAC consultation is complete. File is currently with the Department of Justice (Regulatory Unit File #10000-396).

A cross reference is to be made on recommendations residing in CRM (A09-02, A07-01, A07-03, A00-06).

March 2012: TSB assessment of the response (Satisfactory Intent)

The issue of landing accidents and runway overruns remains on the Board's Watchlist.

While useful, some of the TC activity does not specifically address Recommendation A07-05. The Board continues to be concerned about the length of time being taken regarding the proposed regulatory action designed to address the deficiency related to this recommendation.

The response is considered **Satisfactory Intent**.

December 2012: response from Transport Canada

TSB Recommendation A07-05 **will not** be addressed by the development of a contemporary CRM training standard.

TSB Recommendation A07-05 is being addressed by a series of NPAs (1999-236, 1999-237, 2005-034, 2005-035 and 2005-036). These NPAs will proceed to legal drafting in 2013.

March 2013: TSB assessment of the response (Satisfactory Intent)

The issue of landing accidents and runway overruns remains on the TSB Watchlist as one of the highest transportation risks facing Canadians.

Slow progress is being made, with legal drafting expected in 2013. However, given the elapsed time since these NPAs were drafted, the Board continues to be concerned by the protracted length of time required to enact these new regulations. Therefore, the risk to Canadians from this safety deficiency persists.

The response is considered **Satisfactory Intent**.

November 2013: response from Transport Canada

This item remains a regulatory priority. Pre-publication of the proposed regulations in the *Canada Gazette*, Part 1 is anticipated for fall 2014.

April 2014: TSB assessment of the response (Satisfactory Intent)

The Board continues to be concerned by the protracted length of time required to put these new regulations in place.

The issue of landing accidents and runway overruns is on the 2012 TSB Watchlist because it remains one of the highest transportation risks facing Canadians. The risk to Canadians from the safety deficiency identified in Recommendation A07-05 persists.

The response is considered **Satisfactory Intent**.

March 2015: response from Transport Canada

Transport Canada (TC) agrees with the intent of the recommendation. Pre-publication of the proposed regulations in the *Canada Gazette*, Part 1 is anticipated for spring 2016 as part of the proposed regulations regarding wet/dry contaminated runways.

TC indicated that delays are sometimes inevitable when higher priority tasks take up resources in the regulatory program. The defined criteria for assigning priority to regulatory initiatives are presented in the following table.

TRANSPORT CANADA LIST OF REGULATORY PRIORITIES

Priority 1	Speech from the throne, Budget, Other High Level Government Commitment, initiatives related to the Red Tape reduction and Canada-U.S. Regulatory Cooperation Council
Priority 2	Ministerial priority, Urgency, Transportation Safety Board Watchlist Initiatives
Priority 3	High Strategic Outcome Priority, International/Federal-Provincial Obligations, Time Pressure, other TSB initiatives
Priority 4	Efficiency, Parliamentary, Stakeholder Priorities
Priority 5	Miscellaneous Amendments

Note that the TSB Watchlist initiatives and other TSB initiatives are assigned Priority 2 and 3 respectively. These high ratings were assigned because the department takes TSB safety action very seriously. Occasionally, however, even important regulatory initiatives are shifted due to higher priority issues. The Board should be aware, however, that once Civil Aviation commits to regulatory action, timing may change, but the department will proceed with the initiative until is completed.

March 2015: TSB assessment of the response (Unsatisfactory)

As mentioned in the 02 April 2014 reassessment, the Board continues to be concerned by the protracted length of time required to put these new regulations in place. In its 26 November 2013 response, TC mentioned it anticipated the fall 2014 for pre-publication of the proposed regulations in the *Canada Gazette*, Part 1. TC now anticipates pre-publication of the proposed regulations in the *Canada Gazette*, Part 1 in spring 2016.

The issue of landing accidents and runway overruns is on the 2014 TSB Watchlist because it remains one of the highest transportation safety risks facing Canadians. The risk to Canadians from the safety deficiency identified in Recommendation A07-05 persists. While TC's proposed actions are reasonable, the protracted delay is not. TC's continuing delay in completing the proposed action now warrants a change in the assessment rating of the response.

Therefore, the response is assessed as **Unsatisfactory.**

November 2015: response from Transport Canada

Transport Canada agrees with the intent of the recommendation.

Pre-publication of the proposed regulations in the *Canada Gazette*, Part I is anticipated for 2016 as part of the proposed regulations regarding wet or contaminated runways.

March 2016: TSB assessment of the response (Unsatisfactory)

Transport Canada's latest update anticipates that its proposed regulatory amendments, designed to mitigate the risks highlighted by Recommendation A07-05, will be pre-published in the *Canada Gazette*, Part I sometime in 2016. The Board remains concerned that ongoing delays in this essential but lengthy consultation process prevents the implementation of these important regulatory amendments. Landing accidents and runway overrun occurrences remain on TSB's Watchlist and continue to expose Canadians to unnecessary risks until TC's proposed regulatory amendments are implemented.

Therefore, the response is assessed as **Unsatisfactory.**

January 2017: response from Transport Canada

Transport Canada agrees with the intent of this recommendation. Pre-publication of the proposed regulations in the *Canada Gazette,* Part I are anticipated for 2018 as part of the proposed regulations regarding wet or contaminated runways.

March 2017: TSB assessment of the response (Unsatisfactory)

In November 2013, TC had advised the Board that this was a regulatory priority and that pre-publication of the proposed regulations was anticipated in fall 2014. Since then, the date has continually slipped. In March 2015, TC anticipated pre-publication of the proposed regulations in spring 2016. TC indicated that delays are sometimes inevitable when higher-priority tasks take up resources in the regulatory program. In TC's latest update, it anticipates that its proposed regulatory amendments, designed to mitigate the risks identified by Recommendation A07-05, will be pre-published in the *Canada Gazette*, Part I, in 2018.

The Board is very concerned by these ongoing delays and has included runway excursions on its 2016 Watchlist. Runway overrun occurrences continue to happen and the lack of timely action exposes commercial air travellers in Canada to unnecessary risks until these regulatory amendments are in effect.

Therefore, the response to Recommendation A07-05 is assessed as **Unsatisfactory**.

August 2017: response from Transport Canada

TC agrees in principle with the recommendation.

It should be noted subsequent to the development of the Notice of Proposed Amendment (NPA) for this provision, there has been an important new safety initiative respecting accountability for wet and contaminated runway conditions: Takeoff and Landing Performance Assessment (TALPA)/ Global Reporting Format (GRF). TC is actively involved in the implementation of TALPA/GRF and will strive to ensure that the TALPA/GRF concepts are included in the new

regulations. Pre-publication of the proposed regulations in the *Canada Gazette*, Part I are anticipated for 2018 as part of the proposed regulations regarding wet or contaminated runways.

March 2018: TSB assessment of the response (Satisfactory Intent)

TC has taken a number of actions to address the safety deficiency identified in Recommendation A07-05, with respect to aircraft landing distance considerations in deteriorating weather. These include the following:

- Since 1999, TC has issued 5 Notices of Proposed Amendment (NPAs) addressing aircraft performance on wet and contaminated runways. Proposed regulatory amendments would require aircrew to consider the condition of a dry, damp, wet or contaminated runway surface, and determine that sufficient landing distance is available before conducting an approach to land in deteriorating weather. However, TC has postponed the pre-publication of the proposed amendments in the *Canada Gazette*, Part I, several times, and now anticipates doing so in the spring of 2018; and
- TC is now involved in the implementation of Takeoff and Landing Performance Assessment (TALPA)/ Global Reporting Format (GRF), and intends to include TALPA/GRF concepts in its proposed regulations. The Board is encouraged by this initiative, given its potential to reduce the risk of runway overruns by means of evaluating and reporting runway conditions more effectively, and thus enabling pilots to calculate the required landing distance on a wet or contaminated runway more accurately.

The Board considers that the new regulations will, if adopted, substantially reduce the risk associated with the safety deficiency identified in Recommendation A07-05. However, the TSB continues to be concerned by the protracted length of time required to enact the proposed regulations.

Runway overruns are identified in the 2016 TSB Watchlist as a key safety issue that needs to be addressed to make Canada's transportation system safer. The TSB continues to find contributory factors and underlying risks in recent accident investigations that are similar to those that gave rise to Recommendation A07-05.

Therefore, the Board considers the response to Recommendation A07-05 to show **Satisfactory Intent**.

November 2018: response from Transport Canada

TC agrees in principle with the recommendation.

TC is in the process of developing a Notice of Proposed Amendment (NPA) to address this recommendation. The proposed amendments would require airline operators to put in place measures to help prevent overrun (landing long) by increasing calculated landing distance when runways are wet or contaminated (e.g., snow). The proposed regulations regarding wet or

contaminated runways, are anticipated for pre-publication in the Canada Gazette, Part I, in the spring of 2020.

In addition, to take more immediate action, TC has published a Civil Aviation Safety Alert (CASA) Operation with Aeroplanes Utilizing TALPA-Based Performance Information to calculate landing distance. The purpose of this CASA is to alert Canadian pilots, flight dispatchers, air operators, foreign air operators, and private operators, of:

1. the important safety enhancements that are achieved by utilizing performance information that is based on Take-off and Landing Performance Assessment (TALPA) methods; and
2. the operational consequences, including possible delays, which may be associated with the use of TALPA-based performance information.

TC has also started working on two ACs on wet and contaminated runways - one to address take-offs and one to address landings that should be published in 2019/2020.

February 2019: TSB assessment of the response (Satisfactory Intent)

To date, the following actions have been taken by Transport Canada (TC) to address the safety deficiency identified in Recommendation A07-05, regarding aircraft landing distance considerations in deteriorating weather:

- Since 1999, TC has issued 5 Notices of Proposed Amendment addressing aircraft performance on wet and contaminated runways.
- In 2018, TC published Civil Aviation Safety Alert (CASA) No. 2018-08, *Operation with Aeroplanes Utilizing Take-off and Landing Performance Assessment (TALPA)-Based Performance Information to Calculate Landing Distance*. In the short term, this initiative should help raise the awareness of flight crews, flight dispatchers and air operators of hazards associated with operation on contaminated runways.

In addition to the above actions, TC plans to publish, in 2019/2020, two Advisory Circulars on wet and contaminated runways.

However, TC has postponed the pre-publication of the proposed regulatory amendments in the *Canada Gazette*, Part I, several times. It now anticipates publication in the spring of 2020. Even though the new regulations may, if adopted, reduce the risk associated with the safety deficiency identified in Recommendation A07-05, the Board is very concerned by the protracted delays to enact the proposed regulations.

Since 2010, runway overruns have been part of the TSB Watchlist, which identifies the key safety issues that need to be addressed to make Canada's transportation system even safer. Until the proposed regulatory amendments are in effect, commercial air travellers in Canada continue to be exposed to the risks that gave rise to Recommendation A07-05.

Therefore, the response to Recommendation A07-05 is assessed as **Satisfactory Intent.**

September 2020: response from Transport Canada

Transport Canada (TC) agrees in principle with the recommendation.

TC is not in a position to provide an update on the Notice of Proposed Amendment (NPA) that is expected to specifically address the recommendation to require crews to establish the margin of error between landing distance available and landing distance required before conducting an approach into deteriorating weather. Work on this NPA has not taken place since the last update due to other priorities and COVID-19 has further delayed TC's ability to develop this NPA. At this point, a specific timeframe for the development of the NPA is not available.

However, Transport Canada Civil Aviation (TCCA) has taken multiple steps to encourage accurate reporting of runway surface conditions and the effective use of this information. To add to the guidance material described in previous updates on this recommendation, material is currently being developed targeting a variety of stakeholders and aiming to facilitate good decision-making when landing on contaminated runways:

- ***Advisory Circular (AC) 700-TBD[1] - Global Reporting Format (GRF) for Runway Surface Condition Reporting for Flight Operations Personnel***: The objective of this AC is to provide flight operations personnel with information on the GRF. Although shorter, it will be similar in scope to AC 300-019, which provides information to airport operators who produce the runway surface condition (RSC) reports.
- ***Civil Aviation Safety Alert (CASA) 2020-TBD – Turbojet Braking Performance on Wet Runways***: The accurate reporting of wet runway conditions has been identified as a safety issue and this CASA will reflect the contents of the Federal Aviation Administration (FAA) Safety Alert for Operators (SAFO) 19003 that is considered to represent the best practices for dealing with this issue.
- ***AC 700-TBD – Braking Action Reports***: This AC will provide flight crews with guidance on making accurate braking action reports to airport operators and NAV CANADA. The lack of accurate and consistent pilot braking action reports has been identified as being problematic. To address this issue, the Society of Aircraft Performance and Operations Engineers (SAPOE) has developed a standard for braking action reports that will be used to develop this new guidance material.

All of these materials are anticipated to be completed in the fall of 2020.

In addition, it should be noted that TC has recently made Crew Resource Management (CRM) Training mandatory for all commercial operations. Initial and recurrent training is required to include Threat and Error Management (TEM), which focused on helping crews identify and mitigate situations that increase the risk to a particular flight (threats) such as short and

[1] TBD – Numerical references for these documents will be available when published.

contaminated runways. AC 700-042 (Crew Resource Management)[2] provides significant guidance on the provision of this training.

February 2021: update to response from Transport Canada

The two Advisory Circulars still require translating and consultation. They most likely will not be published until May 2021.

September 2023: response from Transport Canada

Transport Canada (TC) agrees in principle with the recommendation.[3]

Since the publication of the recommendation in 2007, TC published:

- **Civil Aviation Safety Alert (CASA) No. 2018-08** – Operation with Aeroplanes Utilizing Take-off and Landing Performance Assessment (TALPA)-Based Performance Information to Calculate Landing Distance.[4] This initiative helped raise the awareness of flight crews, flight dispatchers and air operators of hazards associated with operation on contaminated runways.
- **Advisory Circular (AC) No. 700-057** – Global Reporting Format (GRF) for Runway Surface Conditions: Guidance for Flight Operations. This document introduced and explained the forthcoming Canadian implementation of the International Civil Aviation Organization (ICAO) Global Reporting Format (GRF) for runway surface condition reporting.
- **Advisory Circular (AC) No. 700-060** – Braking Action Reports. This document provides information and guidance to pilots and operators regarding the observation, reporting, and operational use of braking action reports, including (a) pilot braking action reports (PBAR); and (b) aircraft braking action reports (ABARs).

TC also has made Crew Resource Management (CRM) Training mandatory for all commercial operations. Initial and recurrent training is required to include Threat and Error Management (TEM), which focused on helping crews identify and mitigate situations that increase the risk to

---

2 Transport Canada (2020) – AC 700-042 – Crew Resource Management. Available at: https://tc.canada.ca/en/aviation/reference-centre/advisory-circulars/advisory-circular-ac-no-700-042

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

4 Transport Canada (2018). Civil Aviation Safety Alert (CASA) No. 2018-08 - Operations with aeroplanes utilizing TALPA-Based performance information to calculate landing distance. Available at: https://tc.canada.ca/en/aviation/reference-centre/civil-aviation-safety-alerts/operations-aeroplanes-utilizing-talpa-based-performance-information-calculatelanding-distance-civil-aviation-safety-alerts-casa-no-2018-08

a particular flight (threats) such as short and contaminated runways. AC 700-042 (Crew Resource Management)[5] provides significant guidance on the provision of this training.

Since TC's previous update in September 2020, TC adopted the Global Reporting Format (GRF)—the internationally-accepted method for reporting runway surface conditions—three months prior to the target date specified by the International Civil Aviation Organization (ICAO)[6] in August 2021. This will help mitigate the risk of runway excursions by enabling a harmonized assessment and reporting of runway surface conditions and an improved flight crew assessment of take-off and landing performance.[7]

The development of a Notice of Proposed Amendment (NPA) to address the recommendation of requiring flight crews to establish a margin of error between the landing distance available and landing distance required before commencing an approach into deteriorating weather conditions remains on TC's workplan; however, prioritization of regulatory files has been delayed due to COVID-19 and the ICAO Audit. We are actively working on a prioritization process to identify pending matters, and we will ensure that this one is included for review. We anticipate reaching out to discuss any other outstanding recommendations from the Transportation Safety Board (TSB).

February 2024: TSB assessment of the responses (Satisfactory in Part)

In its responses submitted in September 2020, February 2021, and September 2023, Transport Canada (TC) maintained that it agrees in principle with Recommendation A07-05.

Since the issuance of the recommendation in 2007, TC has published the following documents to encourage accurate reporting of runway surface conditions and promote effective decision making during landings on wet or contaminated runways:

- **Civil Aviation Safety Alert No. 2018-08**: Operation with Aeroplanes Utilizing Take-off and Landing Performance Assessment (TALPA)-Based Performance Information to Calculate Landing Distance (effective 29 September 2018)
- **Advisory Circular No. 700-057**: Global Reporting Format (GRF) for Runway Surface Conditions: Guidance for Flight Operations (effective 01 June 2021)
- **Advisory Circular No. 700-060**: Braking Action Reports (effective 11 February 2022)

In addition to these publications, TC has mandated crew resource management training for all commercial operations. Initial and recurrent training is required to include threat and error

---

5 Transport Canada (2020) – AC 700-042 - Crew Resource Management. Available at: https://tc.canada.ca/en/aviation/reference-centre/advisory-circulars/advisory-circular-ac-no-700-042

6 Transport Canada (2021). Aviation Safety Letter Issue 4/2021 – "Canada Adopts New Global Reporting Format for Runway Surface Conditions". Available at: https://tc.canada.ca/en/aviation/publications/aviation-safety-letter/issue-4-2021/canada-adopts-new-global-reporting-format-runway-surface-conditions

7 International Civil Aviation Organization.

management, which focuses on helping flight crews assess risk and mitigate situations such as short and contaminated runways.

Furthermore, in August 2021, TC implemented the Global Reporting Format (GRF)—the internationally accepted method for reporting runway surface conditions. The GRF is intended to help mitigate the hazards and risks associated with operations on runways that are wet or contaminated with water, slush, snow, frost, or ice by providing flight crews with improved information about expected braking action when they determine landing performance.

Before Recommendation A07-05 was issued, TC had published 5 Notices of Proposed Amendments (NPAs): 1999-236, 1999-237, 2005-034, 2005-035, and 2005-036.[8] These NPAs address aircraft performance on wet and contaminated runways. However, TC postponed the pre-publication of these proposed amendments in the *Canada Gazette*, Part I several times and no further progress has been made to date.

Notwithstanding, as part of its latest update, TC indicated that it remains committed to developing an NPA to specifically address the recommendation to require flight crews to establish the margin of error between landing distance available and landing distance required before conducting an approach into deteriorating weather. However, no timeframe was provided for the development of the NPA and TC acknowledged that prioritization of regulatory files has been delayed due to COVID-19 and the International Civil Aviation Organization Safety Audit.[9]

Runway overruns have remained a key safety issue on the TSB Watchlist since 2010. While the Board is pleased with TC's continued commitment and initiatives to mitigate the safety deficiencies associated with Recommendation A07-05, the Board remains quite concerned with the lack of regulatory requirements and protracted delays for flight crews to ascertain that sufficient landing distance is available before landing based on the weather, the condition of the landing runway, and the resulting aeroplane landing performance.

The Board is of the opinion that, despite the actions taken to date, the safety risk associated with this safety deficiency remains. In the next update, the Board would like TC to advise the TSB on the status of the proposed regulatory amendments related to the recommendation.

Therefore, the Board considers the response to Recommendation A07-05 to be **Satisfactory in Part**.

---

8 Transport Canada, Canadian Aviation Regulation Advisory Council (CARAC) Consultations Database – NPA Search, at https://wwwapps.tc.gc.ca/Saf-Sec-Sur/2/NPA-APM/npaapml.aspx (last accessed on 28 February 2024).

9 International Civil Aviation Organisation, Safety – Background, at https://www.icao.int/safety/CMAForum/Pages/background.aspx (last accessed on 28 February 2024).

Latest response and assessment

September 2024: response from Transport Canada

Transport Canada (TC) agrees in principle with the recommendation.

Since the publication of the recommendation in 2007, TC published:

- **Civil Aviation Safety Alert (CASA) No. 2018-08** – *Operation with Aeroplanes Utilizing Take-off and Landing Performance Assessment (TALPA)-Based Performance Information to Calculate Landing Distance*.[10] This initiative helped raise the awareness of flight crews, flight dispatchers and air operators of hazards associated with operation on contaminated runways.
- **Advisory Circular (AC) No. 700-057** – *Global Reporting Format (GRF) for Runway Surface Conditions: Guidance for Flight Operations*.[11] This document introduced and explained the forthcoming Canadian implementation of the International Civil Aviation Organization (ICAO) Global Reporting Format (GRF) for runway surface condition reporting.
- **Advisory Circular (AC) No. 700-060** – *Braking Action Reports*.[12] This document provides information and guidance to pilots and operators regarding the observation, reporting, and operational use of braking action reports, including (a) pilot braking action reports (PBAR) and (b) aircraft braking action reports (ABARs).

TC has also made crew resource management (CRM) training mandatory for all commercial operations. Initial and recurrent training is required to include threat and error management (TEM), which focused on helping crews identify and mitigate situations that increase the risk to a particular flight (threats) such as short and contaminated runways. AC 700-042 - *Crew Resource Management*[13] provides significant guidance on the provision of this training.

In August 2021, TC adopted the Global Reporting Format (GRF) – the internationally-accepted method for reporting runway surface conditions – three months prior to the target date specified by the International Civil Aviation Organization (ICAO).[14] This will help mitigate the

---

10 Transport Canada (2018). Civil Aviation Safety Alert (CASA) No. 2018-08 – *Operations with aeroplanes utilizing TALPA-Based performance information to calculate landing distance*. Available at: https://tc.canada.ca/en/aviation/reference-centre/civil-aviation-safety-alerts/operations-aeroplanes-utilizing-talpa-based-performance-information-calculatelanding-distance-civil-aviation-safety-alerts-casa-no-2018-08 (last accessed on 23 May 2025).

11 Transport Canada (2021). Advisory Circular (AC) No. 700-057 – *Global Reporting Format (GRF) for Runway Surface Conditions: Guidance for Flight Operations*. Available at: https://tc.canada.ca/en/aviation/reference-centre/advisory-circulars/advisory-circular-ac-no-700-057 (last accessed on 23 May 2025).

12 Transport Canada (2022). Advisory Circular (AC) No. 700-060 – *Braking Action Reports*. Available at: https://tc.canada.ca/en/aviation/reference-centre/advisory-circulars/advisory-circular-ac-no-700-060 (last accessed on 23 May 2025).

13 Transport Canada (2020). Advisory Circular (AC) No. 700-042 – *Crew Resource Management*. Available at: https://tc.canada.ca/en/aviation/reference-centre/advisory-circulars/advisory-circular-ac-no-700-042 (last accessed on 23 May 2025).

14 Transport Canada (2021). Aviation Safety Letter (ASL) Issue 4/2021 – "Canada Adopts New Global Reporting Format for Runway Surface Conditions." Available at: https://tc.canada.ca/en/aviation/publications/aviation-

risk of runway excursions by enabling a harmonized assessment and reporting of runway surface conditions and an improved flight crew assessment of take-off and landing performance.

In addition to the guidance on operations on wet and contaminated runways outlined in AC 700-057 and AC 700-060, TC is still evaluating the next steps for regulatory changes to mandate time-of-arrival landing distance assessments. No additional progress has been made on this commitment since the last update.

However, TC will consider incorporating time-of-arrival landing performance assessment requirements into other regulatory proposals related to commercial air services as a strategy to mitigate these capacity constraints. Since a specific regulatory vehicle has not yet been identified, no timeline can be provided at this time. TC will offer an update on the timeline once an appropriate regulatory package for this amendment is determined.

March 2025: TSB assessment of the responses (Unsatisfactory)

In its latest response, Transport Canada (TC) maintained that it agrees in principle with the recommendation.

TC reiterated the mitigation measures taken since the issuance of the recommendation in 2007; however, it also confirmed that no additional progress has been made since the last update. As for TC's commitment to develop a Notice of Proposed Amendment (NPA) to specifically address the recommendation to require flight crews to establish the margin of error between landing distance available and landing distance required before conducting an approach into deteriorating weather, the Department indicated that it is still evaluating the next steps for regulatory changes to mandate time-of-arrival landing performance assessments. Additionally, TC stated that it will consider incorporating these requirements into other regulatory proposals related to commercial air services, but it has not yet identified a specific regulatory vehicle or timeline. TC will provide an update once a regulatory package is determined.

The Board agrees that the measures in place and the actions taken by TC to date are important safety actions. However, they do not fully address the risk associated with the safety deficiency identified in Recommendation A07-05. Furthermore, this recommendation was issued more than 17 years ago. The Board is concerned by the protracted delays in addressing this matter.

Until there are clear standards limiting approaches and landings in deteriorating weather, the risks associated with the safety deficiency identified in Recommendation A07-05 will remain.

Therefore, the Board considers the response to Recommendation A07-05 to be **Unsatisfactory**.

---

safety-letter/issue-4-2021/canada-adopts-new-global-reporting-format-runway-surface-conditions (last accessed on 23 May 2025).

File status

The TSB will continue to monitor the progress of TC's proposed regulatory amendments to mitigate the risk associated with the safety deficiency identified in Recommendation A07-05, and it will reassess the deficiency on an annual basis or when otherwise warranted.

This deficiency file is **Active**.