



Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



AIR TRANSPORTATION SAFETY INVESTIGATION REPORT A25C0066

MID-AIR COLLISION

Harv's Air Service Ltd.
Cessna 172R, C-GZKA
and

Cessna 152, C-GGPE
Steinbach (South) Aerodrome (CKK7), Manitoba, 0.25 SM S
08 July 2025

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History of the flights

On the morning of 08 July 2025, the Harv's Air Service Ltd. Cessna 172R aircraft (registration C-GZKA, serial number 17280054) and Cessna 152 aircraft (registration C-GGPE, serial number 15281224) were each assigned to a pilot who was planning to conduct solo training in the circuit under visual flight rules (VFR) at the Steinbach (South) Aerodrome (CKK7), Manitoba.

At approximately 0810,¹ the pilot of C-GZKA announced that the aircraft was lined up for takeoff on Runway 36; shortly thereafter he took off to join the circuit, which was to the left. Two minutes

¹ All times are Central Daylight Time (Coordinated Universal Time minus 5 hours).

later, the pilot of C-GGPE also announced that the aircraft was lined up for takeoff on Runway 36; shortly thereafter he took off to join the circuit. At this time, these 2 aircraft were the only ones in the circuit.

From 0821 to 0835, 4 other aircraft took off from CKK7. One of them (registration C-GFJV) joined the circuit.

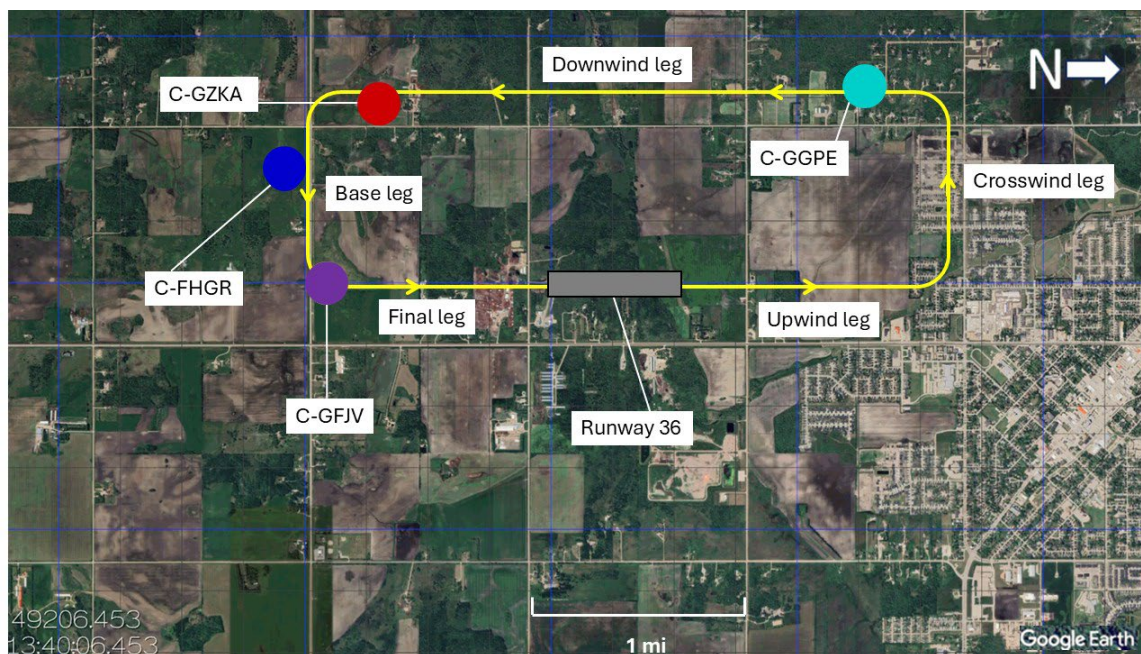
At 0835, the pilot of another aircraft (registration C-FHGR) announced that the aircraft was lining up on Runway 36 for takeoff. At that moment, C-GZKA was approximately 1 statute mile (SM) on final for Runway 36.

At 0836, C-FHGR began to take off. At that point, C-GZKA was 0.8 SM on final, but its pilot subsequently aborted the approach and conducted a go-around. C-GZKA turned 90° to the right, climbed back to circuit altitude, turned back to cross the aerodrome's midfield, and then re-entered the circuit behind C-FHGR, which was by then on downwind. At that point, 4 aircraft were in the circuit: C-FHGR, C-GZKA, C-GFJV, and C-GGPE.

At 0839:22, the pilot of C-GZKA made a radio call stating that the aircraft was mid-downwind for Runway 36 and planning a touch-and-go.

At 0840:01, the pilot of C-GFJV announced a turn onto final for Runway 36, and 5 seconds later, the pilot of C-GZKA stated that the aircraft was extending its downwind leg. C-GFJV was number 1 for the runway, followed closely by C-FHGR, which was then on the base leg, and C-GZKA, which was near the end of the downwind leg; C-GGPE had just turned onto downwind (Figure 1).

Figure 1. Radar positions of the 4 aircraft (C-GZKA, C-GGPE, C-GFJV, and C-FHGR) in the circuit at 0840:06 (Source: Google Earth, with TSB annotations)



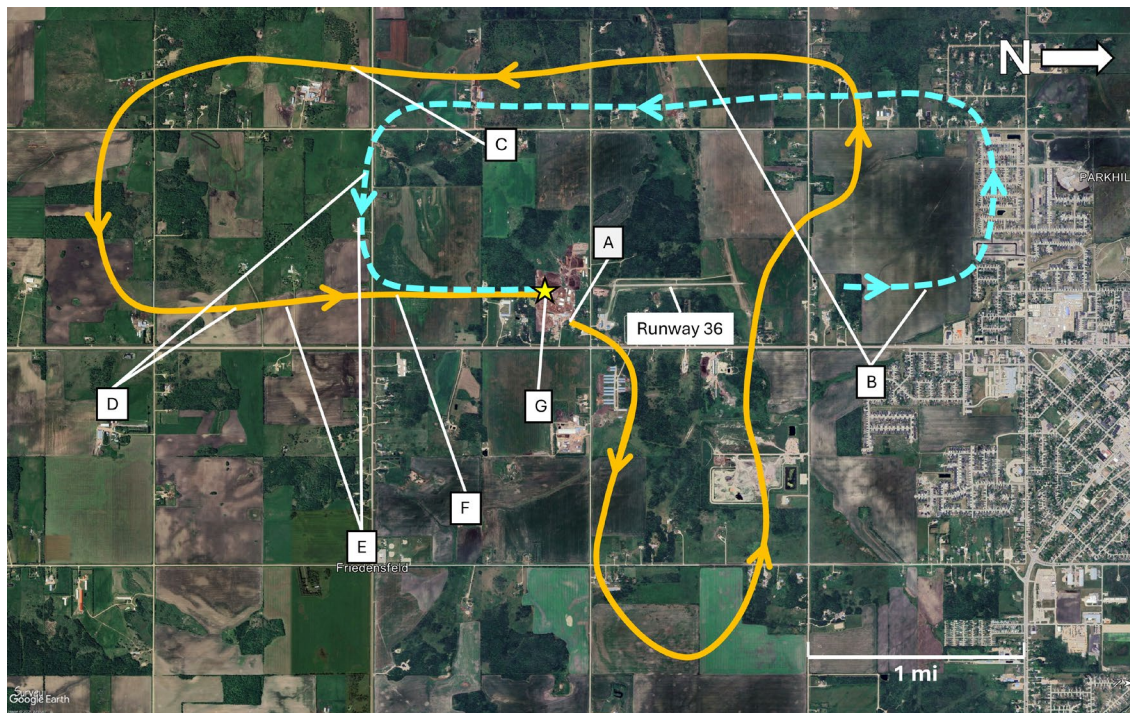
At 0840:20, the pilot of C-GGPE announced that the aircraft was at the beginning of the downwind leg for Runway 36 and intended to conduct a touch-and-go. Nineteen seconds later,

C-FHGR turned onto final about 1 SM from the runway threshold. Both aircraft ahead of C-GZKA in the circuit (C-GFJV and C-FHGR) completed their touch-and-go.

At 0841:33, the pilot of C-GZKA announced that the aircraft was on final for Runway 36. At 0841:41, the pilot of C-GGPE also announced turning final for Runway 36. At that time, both aircraft were separated only by 0.5 SM horizontally and about 200 feet vertically.

At 0841:58, both aircraft were 1 SM on final for the runway (Figure 2). C-GZKA was approximately 100 feet directly above C-GGPE. At 0842, the 2 aircraft made brief contact a 1st time. The pilot of C-GGPE immediately applied full power, and the aircraft pitched up. The 2 aircraft collided again, became entangled, and impacted the ground, coming to rest 0.25 SM south of the runway threshold. Both pilots were fatally injured. Both aircraft sustained substantial damage from the collision and were destroyed by a post-impact fire.

Figure 2. Approximate flight tracks of C-GZKA (solid line) and C-GGPE (dashed line) before the mid-air collision (star) (Source: Google Earth, with TSB annotations)



Legend

- A. 0836 – C-GZKA aborts approach.
- B. 0839:22 – C-GZKA, back in circuit and mid-downwind, is number 3 in line to land. C-GGPE, on the upwind leg, is number 4.
- C. 0840:06 – Pilot of C-GZKA announces extension of downwind leg.
- D. 0841:33 – Call from C-GZKA announcing on final. C-GGPE on base leg.
- E. 0841:41 – C-GZKA 1.3 NM on final. Call from C-GGPE announcing turn onto final. Vertical and horizontal separation reduced.
- F. 0841:58 – Both aircraft 1 NM on final. C-GZKA 100 feet (approx.) above C-GGPE.
- G. 0842:29.6 – Collision.

Pilot information

The pilots of the 2 aircraft that collided were qualified for the flights in accordance with existing regulations.

The pilot of C-GZKA held a private pilot licence - aeroplane (PPL), which had been obtained on 01 August 2024. Before the occurrence flight, the pilot had accumulated 169.4 total flight time hours, including 73.2 hours solo flight time, and was working toward a commercial pilot licence - aeroplane (CPL). The pilot's medical certificate was valid at the time of the occurrence.

The pilot of C-GGPE held a student pilot permit - aeroplane (SPP), issued on 08 April 2025 and valid until 01 July 2029, and was working toward a PPL. Before the occurrence flight, the pilot had accumulated 59.3 total flight time hours, including 14.4 hours solo flight time. The pilot's medical certificate was valid at the time of the occurrence.

Weather information

The weather station closest to CKK7 is Winnipeg/James Armstrong Richardson International Airport (CYWG), Manitoba, located 33 nautical miles (NM) to the northwest. An aerodrome special meteorological report (SPECI) issued at 0849 contained the following information:

- Winds from 310° true (T) at 7 knots
- Visibility of 5 SM in smoke
- Sky clear
- Temperature 16 °C and dew point 14 °C
- Altimeter setting 30.08 inches of mercury (inHg)

At the time of the occurrence, severe wildfires were burning in northern Manitoba that produced a significant amount of smoke. Winds coming from the northwest brought the smoke to the southern part of the province, reducing visibility at times. Although the visibility during the occurrence flights was limited owing to the smoke, meteorological conditions were suitable for VFR flight.

Sun's position

At the time of the occurrence, the sun was about 28° above the horizon and at an azimuth of 84° magnetic (M).² Given that the base leg of the circuit at CKK7 is on a heading of approximately 086°M, it was pointing almost directly into the sun at the time of the occurrence. It could not be determined whether the pilots of C-GZKA and C-GGPE were wearing sunglasses during their flights.

Aerodrome information

CKK7 is operated by Harv's Air Service Ltd., and most of the air traffic into and out of the aerodrome comes from the company's flight training unit operation. The aerodrome is situated in Class G airspace, which is uncontrolled. At the time of the occurrence, CKK7 had an aerodrome traffic frequency (ATF), meaning that there was a specific frequency for radio-equipped aircraft to listen to.

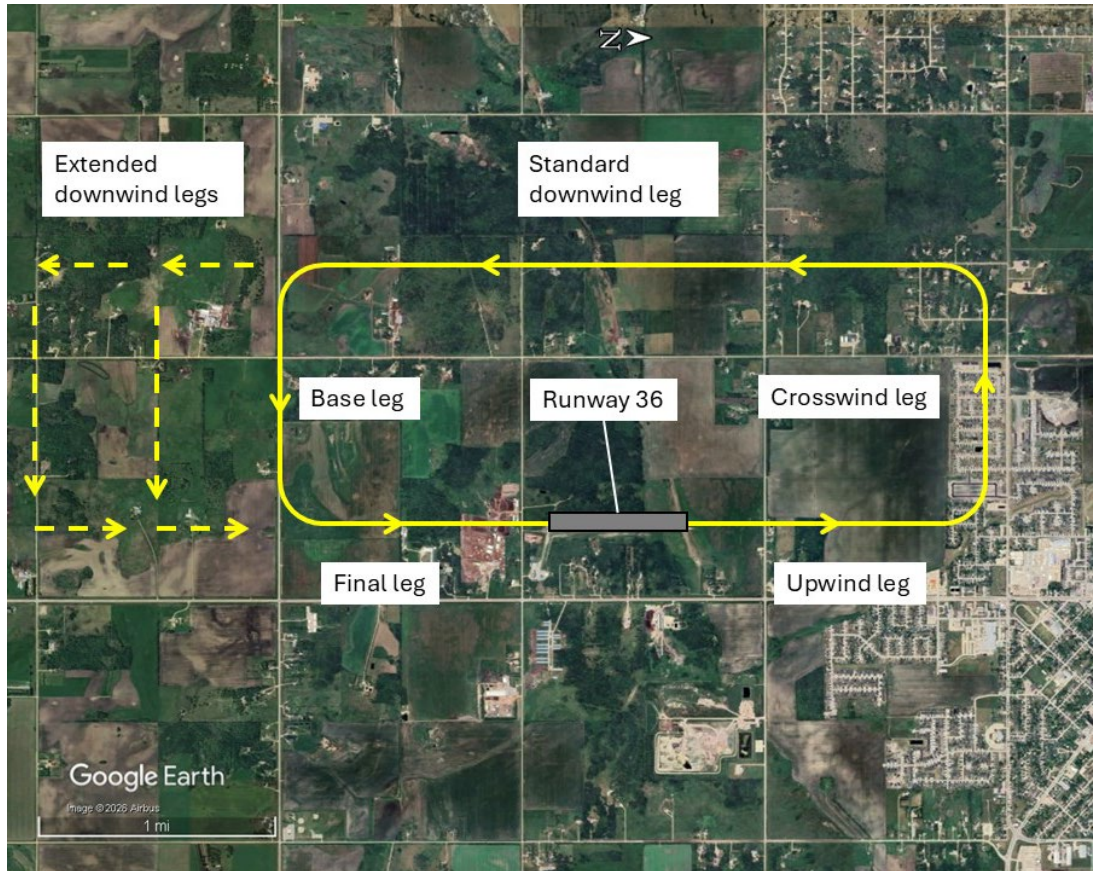
Circuit pattern

The circuit pattern for Runway 36 at CKK7 is a left-hand circuit flown at 1600 feet above sea level (ASL). The circuit is divided into 5 legs: upwind, crosswind, downwind, base, and final. It is common practice for pilots to fly 1 SM on the upwind leg before turning onto the crosswind leg and then flying 1 SM before turning onto the downwind leg. Pilots then turn onto the base leg when the aircraft is at a relative 45° angle to the runway threshold and turn onto final about 1 SM away from the runway. When the circuit is particularly crowded, some pilots may elect to extend the downwind leg to maintain sufficient spacing between their aircraft and the preceding traffic.

² National Oceanic and Atmospheric Administration, Global Monitoring Laboratory, Solar Calculator at <https://gml.noaa.gov/grad/solcalc/> (last accessed on 19 September 2026).

To do so, pilots will normally fly an extra 0.5 to 1 SM on the downwind leg and subsequently extend the final leg to 1.5 to 2 SM (Figure 3).

Figure 3. Standard (solid line) and extended (dashed lines) circuits at Steinbach (South) Aerodrome (Source: Google Earth, with TSB annotations)



Position reporting

Pilots make radio calls to report their position and intentions throughout their flight. During a local flight at aerodromes with an ATF, pilots flying radio-equipped aircraft are encouraged to follow guidance provided in the *Transport Canada Aeronautical Information Manual* (TC AIM).³ This includes reporting when entering the runway for departure and, when conducting continuous circuits, reporting when joining the downwind leg, on final approach for the active runway, and clear of the runway surface after landing. Pilots conducting continuous circuits should also state their intentions (e.g., planning a touch-and-go or a full stop) when they are established on final approach.

These calls allow other pilots to know an aircraft's position and what to expect from that aircraft. By actively listening to these calls, pilots will have a better picture of what is going on in a circuit, which will enhance their situational awareness. As explained in Transport Canada's *Human Factors for Aviation – Basic Handbook*,

³ Transport Canada, TP 14371E, *Transport Canada Aeronautical Information Manual* (TC AIM), RAC – Rules of the Air and Air Traffic Services (March 2025), section 4.5.7.

[s]ituational awareness does not happen instantaneously, but develops on three different levels. First, the person has to perceive the elements of the situation from sources such as information displays, communication, or external visual references. Second, the person then integrates the information by applying experience and knowledge. Third, the person projects the information into the future to make and modify plans as tasks are completed or delayed and new developments arise. This does not mean that pilots are expected to be fortune tellers. Rather, it means that skilled pilots who are on top of things will know what will happen if they take a particular action.⁴

It is important that pilots adhere to these procedures to avoid any potential conflict with other traffic, especially at an uncontrolled aerodrome.

During the occurrence flight, the pilot of C-GZKA extended the downwind leg by 1 SM twice to create more spacing between the aircraft and other traffic in front of it.

Visual lookout

The see-and-avoid principle is the basic method used for visual surveillance and collision avoidance in VFR flight. It is based on active visual scanning, as well as on the ability to detect conflicting aircraft and take the necessary action to avoid them. This method has been examined in a number of other TSB investigations.⁵ Some of those investigations concluded that given its limitations, “[r]elying solely on visual detection increases the risk of collision while in uncontrolled airspace.”⁶

Furthermore, the TC AIM states the following:

When operating in accordance with VFR or in accordance with IFR [instrument flight rules] but in VMC [visual meteorological conditions], pilots have sole responsibility for seeing and avoiding other aircraft. Aural and visual alertness are required to enhance safety of flight in the vicinity of uncontrolled aerodromes.⁷

The Australian Transport Safety Bureau has also expressed reservations about this method and provided the following explanations:

The human visual system is particularly attuned to detecting movement but is less effective at detecting stationary objects. Unfortunately, because of the geometry of collision flightpaths, an aircraft on a collision course will usually appear to be a stationary object in the pilot’s visual field.

If two aircraft are converging on a point of impact on straight flightpaths at constant speeds, then the bearings of each aircraft from the other will remain constant up to the point of collision [...].

⁴ Transport Canada, TP 12863E, *Human Factors for Aviation – Basic Handbook* (February 2004; reprinted 2021), p. 158.

⁵ TSB air transportation safety investigation reports A23Q0063, A21O0069, A20O0053, A19W0099, A18O0150, A17Q0030, A15W0087, A13P0127, A12C0053, A12H0001, A09C0114, A06O0206, A99P0056, A99P0108, and A99P016.

⁶ TSB air transportation safety investigation reports A20O0053, A19W0099, and A18O0150.

⁷ Transport Canada, TP 14371E, *Transport Canada Aeronautical Information Manual* (TC AIM), RAC – Rules of the Air and Air Traffic Services (March 2025), section 4.5.6.

From each pilot's point of view, the converging aircraft will grow in size while remaining fixed at a particular point in his or her windscreen.⁸

It could not be confirmed whether, at the time of the occurrence, C-GZKA and C-GGPE had any lights turned on, other than their beacon lights. Having more lights on in daylight was not a Harv's Air Service policy; however, while not required by regulations, the TC AIM recommends "that all aircraft show a landing light(s) during the takeoff and landing phases and when flying below 2000 feet above ground level (AGL) within terminal areas and aerodrome traffic zones"⁹ to enhance the probability of the aircraft being seen.

Previous occurrence involving Harv's Air Service Ltd. aircraft

Approximately 6 months before this occurrence, there was an event in which there was a risk of collision between 2 Harv's Air Service Ltd. aircraft on final for Runway 18 at CKK7. There was no physical contact made between the 2 aircraft, and both landed safely.

After flight instructors and management from Harv's Air Service Ltd. discussed the event, a corrective action plan (CAP) was put in place, stipulating a new procedure whereby all radio calls made by pilots of aircraft on final must include the distance from the runway threshold (e.g., "C-GABC, 1 mile final Runway 36"). The intent of the procedure was to improve pilots' situational awareness and make it easier for them to spot other aircraft on final. The discussion also included limiting the number of aircraft in the circuit at any given time, but no specific policy had been drafted at the time of this occurrence.

On the day of the occurrence, only 1 of the pilots in the circuit was heard stating their distance from the runway threshold when making their call on final. Neither of the 2 occurrence pilots ever stated their distance from the runway threshold on any of their radio calls.

Previous TSB investigations on mid-air collisions

Including this one, the TSB has investigated 13 mid-air collision accidents since 2011.¹⁰ In several of these occurrences, the TSB identified the ineffectiveness of the see-and-avoid concept for avoiding mid-air collisions and stated that until there is wide adoption of traffic awareness systems, the risk of mid-air collisions will not be substantially reduced.

Air traffic awareness systems

Neither of the 2 aircraft involved in this mid-air collision was equipped with an airborne collision avoidance system (ACAS), nor were they required to be by regulation.

⁸ Australian Transport Safety Bureau, ATSB Transport Safety Report, Research Report, "Limitations of the See-and-Avoid Principle," reprint (November 2004), section 2.7.4, at [atsb.gov.au/sites/default/files/media/4050593/see_and_avoid_report_print.pdf](https://www.atsb.gov.au/sites/default/files/media/4050593/see_and_avoid_report_print.pdf) (last accessed on 19 September 2026).

⁹ Transport Canada, TP 14371E, *Transport Canada Aeronautical Information Manual* (TC AIM), AIR – Airmanship (March 2025), section 4.5.

¹⁰ TSB air transportation safety investigation reports A24W0086, A23Q0069, A21O0069, A20O0053, A19W0099, A18O0150, A17Q0030, A15W0087, A13P0127, A12H0001, A12C0053, and A11P0027.

A more recent form of traffic awareness system is automatic dependent surveillance—broadcast (ADS-B).¹¹ Neither of the 2 aircraft involved in this mid-air collision was equipped with ADS-B IN, nor were they required to be by regulation.

NAV CANADA currently requires all aircraft flying into Class A and B airspace to be equipped with a transponder with ADS-B OUT. This mandate will be expanded to Class C, D, and E airspace no sooner than 2028. At the time of report writing, there is no requirement for aircraft to be equipped with a system with ADS-B IN.

TSB laboratory reports

The TSB completed the following laboratory report in support of this investigation:

- LP051/2025 – Radar Analysis

Safety action taken

After this occurrence, Harv's Air Service Ltd. took the following action to reduce the risk of mid-air collision in the circuit at CKK7:

- A limit of 3 aircraft in the circuit at a given time was imposed.
- The following requirements were introduced:
 - All radio calls made on final must include the aircraft's distance from the threshold.
 - All students and aircraft renters must attend a safety briefing on the importance of using effective lookout techniques and maintaining situational awareness and aircraft blind-spot awareness.
 - All aircraft lights must be on at all times during flight.
- The company began upgrading its fleet by installing light-emitting diode (LED) lighting to increase the aircraft's visual conspicuity in flight and by expanding the number of aircraft equipped with ADS-B IN and ADS-B OUT capabilities.

Safety messages

This occurrence highlights the limitations of the see-and-avoid principle and why it is important for pilots to actively listen to radio calls from other aircraft to maintain situational awareness.

Aircraft owners and pilots are encouraged to install systems that provide air traffic information to enhance pilots' situational awareness.

This report concludes the Transportation Safety Board of Canada's investigation into this occurrence. The Board authorized the release of this report on 08 July 2026. It was officially released on 21 October 2026.

¹¹ Automatic dependent surveillance—broadcast (ADS-B) is advanced surveillance technology in which aircraft equipped with ADS-B OUT share position, altitude, velocity, and other information with air traffic control (ATC) and other appropriately equipped aircraft. ADS-B IN technology involves the receipt, processing, and display of other aircraft's ADS-B transmissions. ADS-B IN is necessary for airborne applications.

Visit the Transportation Safety Board of Canada's website (www.tsb.gc.ca) for information about the TSB and its products and services. You will also find the Watchlist, which identifies the key safety issues that need to be addressed to make Canada's transportation system even safer. In each case, the TSB has found that actions taken to date are inadequate, and that industry and regulators need to take additional concrete measures to eliminate the risks.

ABOUT THIS INVESTIGATION REPORT

This report is the result of an investigation into a class 4 occurrence. For more information, see the Policy on Occurrence Classification at www.tsb.gc.ca

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