



<i>Night IFR Approach in IMC Claims IFR-Rated Private Pilot and Passenger</i>	9
<i>Sustained Stall</i>	13

Night IFR Approach in IMC Claims IFR-Rated Private Pilot and Passenger

The following article is based on TSB Final Report A11O0239—Loss of Control—Collision with Terrain. This accident in Ottawa, Ont., took the lives of two local pilots and received a lot of media attention. The TSB report is a very compelling read for all of us, but particularly for IFR-rated private pilots or soon-to-be IFR-rated private pilots.

Summary

On December 14, 2011, a privately owned Cessna 177A Cardinal departed Wilkes-Barre Wyoming Valley Airport (KWBW), Pa., USA, with two persons on board, on an IFR flight plan to Ottawa/Carp Airport (CYRP), Ont. Approximately 44 NM from destination, because of low visibility and ceilings at destination, the aircraft diverted to its filed alternate of Ottawa/Macdonald-Cartier International Airport (CYOW), Ont. The aircraft was then cleared for an ILS approach to Runway 07. At about 19:12 (all times quoted are EST), while flying the approach in instrument meteorological conditions (IMC) at night, the aircraft collided with the ground approximately 1.9 NM west of the threshold of Runway 07. The aircraft was destroyed, and both occupants were fatally injured. There was no fire. The 406 MHz ELT activated on impact.



Wreckage of Cessna Cardinal 1.9 NM west of the threshold of Runway 07 at CYOW

History of the flight

The aircraft was returning to CYRP from a 12-day trip to southern Florida and the Bahamas. Both persons on board were licensed pilots and generally shared the flying duties throughout the trip.

On December 13, 2011, the two pilots checked out of their hotel at 07:00 and departed Marsh Harbour International

Airport (MYAM), Bahamas, at 09:57 for Newport News/Williamsburg International Airport (KPHF), Va. The flight consisted of three stops and 10.5 hr of flight time, arriving at KPHF at 00:16 on December 14, 2011. The pilots checked into a hotel at 00:55.

At 12:15 on December 14, 2011, the aircraft departed KPHF and arrived in Wilkes-Barre Wyoming Valley Airport (KWBW), Pa., at 14:51. At approximately 17:07, after civil twilight, the aircraft departed KWBW on an IFR flight plan destined for CYRP. At 18:40, approximately 44 NM south of CYRP, the pilot-in-command (PIC) requested a diversion to CYOW for a Runway 07 ILS approach. CYOW is located 15 NM east of CYRP. An ILS approach is unavailable at CYRP.

At 19:06, Ottawa Terminal ATC cleared the aircraft for the ILS approach to Runway 07 and issued radar vectors to intercept the final approach course. The aircraft intercepted the localizer approximately 8 NM from the threshold, and the terminal controller instructed the aircraft to contact the Ottawa tower controller. The tower controller informed the aircraft that it was number one in the landing sequence. At approximately 4.5 NM from CYOW, while on the ILS approach, the aircraft began to deviate north of the localizer. The tower controller informed the pilot of the deviation. The pilot acknowledged the information and informed the tower controller that they were trying to get back on track. A minute later, as the aircraft was approaching the centre of the localizer, the tower controller cleared the aircraft to land. Shortly after receiving the landing clearance, the aircraft began to deviate northbound again; the controller informed the pilot of the deviation. There was a brief, unrecognizable transmission on the tower frequency, but it could not be confirmed that it came from the Cessna 177. Eighteen seconds later, the controller instructed the aircraft to pull up and go around. There was no response.

At approximately 19:12, the aircraft entered a steep right turn with a rapid descent, and struck power lines before impacting the ground 1.9 NM west of the threshold of Runway 07. Radar data show that, while on the approach, the aircraft twice deviated

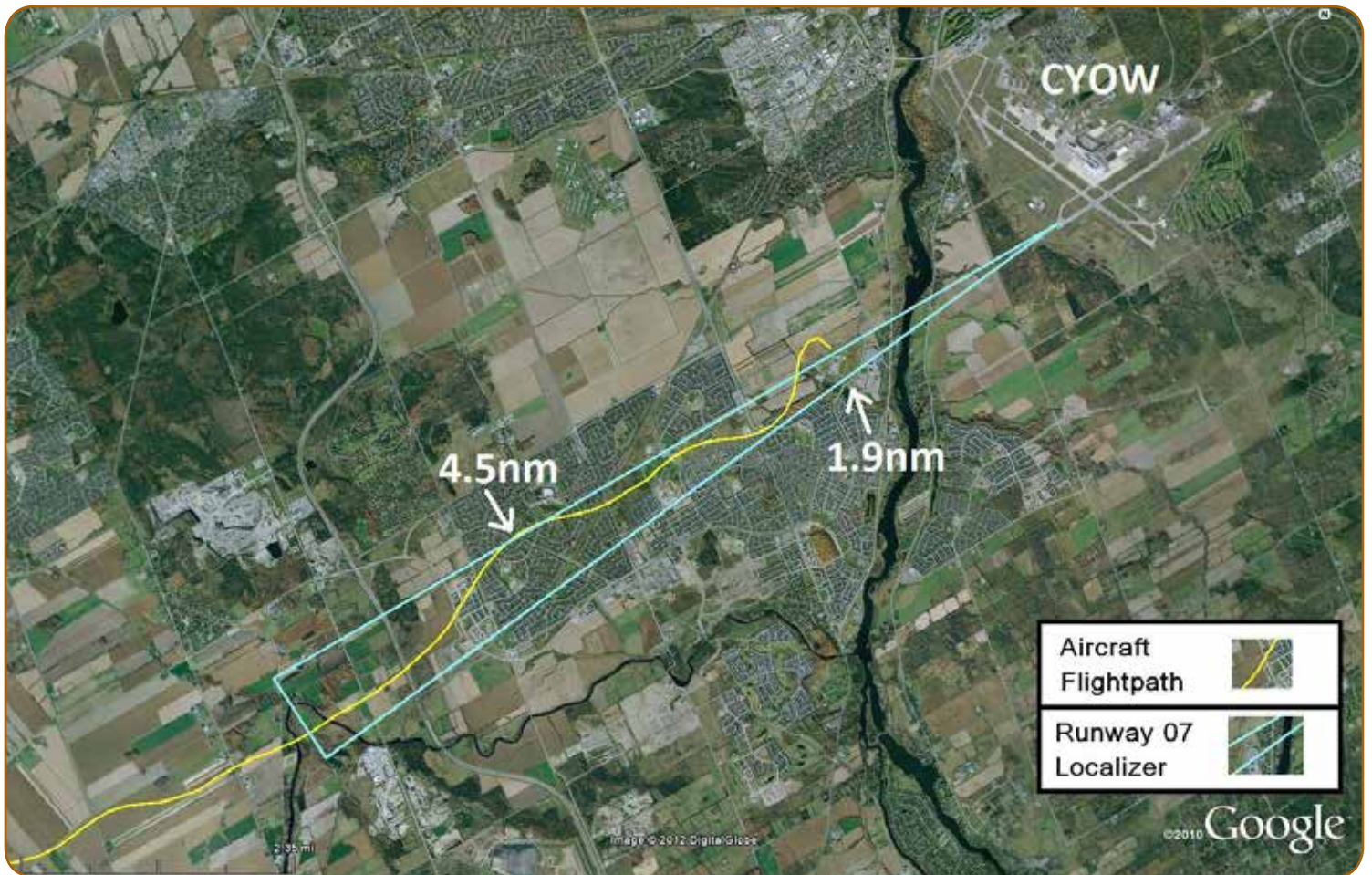


Figure 1—Aircraft's flight path showing its deviations from the localizer during the final approach.

significantly from the localizer to a point that would have caused the localizer indications on the aircraft instruments to go to full deflection. Airspeed on the approach was maintained above 100 kt until the loss of control (Figure 1).

Weather and flight planning

At 16:21, while on the ground at KWBW, the PIC filed an IFR flight plan with Williamsport flight service station (FSS). The flight was planned to depart at 17:00 and cruise at 5 000 ft, and was estimated to take 2 hr and 10 min to CYRP. The alternate airport for the flight was CYOW; the forecast weather was within alternate limits at the time of filing.

When the pilot called the FSS to file the flight plan, a weather briefing was not requested. It could not be determined if the pilot accessed the latest weather reports on the Internet prior to the flight-plan phone call. The flight service specialist asked if the pilot wanted information relating to icing and proceeded to inform the pilot of an AIRMET that forecast moderate icing between 3 000 and 14 000 ft on the flight route. The pilot asked about the area around Watertown, which was on the flight route, and the flight service specialist indicated that there were no pilot reports, but that they might encounter some showers as indicated by the AIRMET.

The latest forecast weather available for CYOW at the time that the flight plan was filed was issued at 15:38. Forecast conditions at 18:00 were visibility greater than 6 SM, scattered cloud at 1 500 ft and broken ceiling at 4 000 ft. Between 18:00 and 20:00, the conditions were forecast to deteriorate temporarily to visibility of 2 SM in mist and ceiling at 900 ft overcast. At 20:00, conditions were forecast to improve to visibility greater than 6 SM in light snow and rain showers with overcast ceilings at 3 000 ft.

The latest actual weather at CYOW at the time that the flight plan was filed was issued at 16:00. It described conditions as wind 090° at 8 kt, visibility 3 SM in mist and ceiling overcast at 700 ft.

At 18:12, while cruising at 5 000 ft, 29 NM south of Watertown International Airport (KART), the pilot requested a weather update for KART and CYOW from Boston Flight Watch (BFW). The BFW specialist reported conditions at KART to be visibility 10 SM and overcast ceilings at 9 500 ft, and conditions at CYOW to be visibility 3 SM in mist and overcast ceiling at 200 ft. The specialist repeated the AIRMET previously described, and the PIC indicated that the crew would check for updates once the aircraft was across the border.

At 18:34, while crossing the Canada–USA border near Gananoque, Ont., the pilot requested a weather update for CYOW from Montréal ATC. The weather relayed was the same as previously reported by BFW. Six minutes later, the pilot asked to change the destination to CYOW.

At 19:06, before clearing the aircraft for the ILS approach, Ottawa Terminal ATC issued the latest weather to the pilot: ceiling at 200 ft AGL, visibility 3 SM in mist and wind 100° at 10 kt gusting to 15 kt.

The aircraft

The aircraft was certified, equipped and maintained in accordance with existing regulations. Examination of the aircraft wreckage determined that there were no signs of pre-impact damage or defects that would have precluded safe flight. The aircraft was not certified for flight into known icing conditions and did not have any anti-ice equipment other than a heated pitot tube.

The aircraft collided with the ground with the flaps selected up. In this configuration, the Cessna 177A stall speed is listed in the owner’s manual as 57 kt.

The pilot and passenger

The PIC held a private pilot licence, a valid Category 3 medical certificate and a valid Group 3 instrument rating. The pilot’s personal logbook, last completed prior to the return trip, contained the following totals (hr):

Total flying time	429.1
Night flying as PIC	30.3
PIC on the accident aircraft	28.7
Actual instrument	44.1
Simulated instrument (hood)	40.9
Simulator	41.8

While the logbook showed a total of 44.1 hr of actual instrument time, the TSB determined that this column was being used to record time spent flying on IFR flight plans rather than time spent in actual IMC. Analysis of the departure, arrival and en route weather of these recorded flights suggests the pilot had experienced very little, if any, actual flight in IMC.

Canadian Aviation Regulation (CAR) 401.05(2)(b)(i)(B) requires a pilot who is carrying passengers at night to have completed five night takeoffs and five night landings in the preceding six months. Records indicate that the PIC had completed only one takeoff and two landings at night in the prescribed time period.

The passenger held a private pilot licence and a valid Category 3 medical certificate. Records indicate that the passenger had

approximately 330 hr of experience, including 58 hr at night as PIC and 5.9 hr under simulated instrument conditions. The passenger did not possess an instrument rating.

Flight tests

Flight tests in Canada are evaluated using a 4-point marking scale. A detailed explanation of the marking scale is outlined in the *Flight Test Guide—Instrument Rating* published by Transport Canada (TC), but the following applies in general:

- 4 – Performance is well executed considering existing conditions.
- 3 – Performance is observed to include minor errors.
- 2 – Performance is observed to include major errors.
- 1 – Performance is observed to include critical errors, or the aim of the test sequence/item is not achieved.

The PIC had attempted 5 flight tests since beginning flight training in 2003.

On May 5, 2005, the PIC completed a private pilot flight test, which was assessed as a pass. On Exercise 24A: Instrument Flying—Full Panel, the PIC received a mark of 2. The pilot examiner noted that the candidate was “chasing the needle”, referring to a series of over-corrections in an effort to regain the desired track.

On October 26, 2007, the PIC completed an instrument-rating flight test, which was assessed as a pass. On Exercise 8: ILS Approach, the PIC received a mark of 2. The pilot examiner noted that the candidate let the glideslope deviate to ½-scale deflection inside the outer marker, because he was trying to read the pre-landing checklist. The PIC was granted an instrument rating valid to November 1, 2009.

On December 11, 2009, the PIC attempted an instrument rating renewal flight test, which was assessed as a fail. On Exercise 2: IFR Operational Knowledge, the PIC received a mark of 1. The pilot examiner noted that the candidate was unable to explain the approach ban and showed an unacceptable level of knowledge. The flight test was stopped on the ground after this exercise was failed.

On October 7, 2011, the PIC attempted an instrument rating renewal flight test, which was assessed as a fail. On Exercise 8: ILS Approach and Exercise 9: Missed Approach, the PIC received a mark of 1. The pilot examiner noted that the candidate let the glideslope deviate to full-scale deflection and let the course deviation indicator deflect fully en route to the missed-approach waypoint.

TC's *Flight Test Guide—Instrument Rating* describes the aim, description and performance criteria for each exercise to be completed on the flight test. For Exercise 8 (ILS or LPV¹ Instrument Approach [Precision Approach]), the Performance Criteria section, (i), states that assessment will be based on the candidate's ability to, "on final approach course, allow no more than ½-scale deflection of the localizer or glideslope indications".

CAR Standard 421.49(4)(b) requires applicants renewing an instrument rating that expired more than 24 months before the date of application to rewrite the instrument-rating written examination (INRAT). The original instrument rating held by the PIC would have been expired for 24 months on November 1, 2011.

On October 31, 2011, the PIC completed an instrument-rating renewal flight test, which was assessed as a pass. The PIC received a mark of 2 on 4 exercises, including Arrival, Holding, RNAV Approach and ILS Approach. The pilot examiner noted on the flight test report that the candidate let the localizer deviate to ½-scale deflection upon interception. Notes written on a separate piece of paper during the flight test described the localizer deviation as ¾-scale. Had the most recent instrument-rating renewal flight test not been completed, the PIC would have had to rewrite the INRAT.



Factors affecting pilot decision making

The PIC had several work appointments that were scheduled for the day following the accident. In addition, the pilot also had personal commitments to attend to later that week.

In the *Operators Guide to Human Factors in Aviation*² (OGHFA), the Flight Safety Foundation (FSF) describes the phenomenon of making a decision to continue to the planned destination or toward the planned goal even when significantly less risky alternatives exist. This phenomenon has been variously referred to as "press-on-itis", "get-home-itis", "hurry syndrome", "plan continuation" and "goal fixation"³.

The FSF states that the following are some of the reasons that aircrews may be susceptible to "press-on-itis":

- They have a personal commitment/appointment at the completion of the flight, or they may simply want to get to the destination.
- They want to "just get the job done" (excessive commitment to task accomplishment) and are influenced by organizational goals such as on-time arrival, fuel savings and passenger convenience.
- They focus solely on aircraft flight path control, due to turbulence and other distractions.
- "We are almost there, let's just do it and get it over with."
- They become task-saturated.
- They are fatigued.
- They lose situational awareness and are not fully aware of the potentially perilous situation.
- They have not set performance limits and trigger gates that require a go-around.
- They are not fully aware of their own limitations and/or the aircraft's limitations.

Analysis

The PIC was appropriately licensed and instrument rated. However, the most recent, and other, flight test reports showed signs that the PIC had continued difficulty conducting ILS approaches. In addition, the PIC was not current in night-flying operations, and had very little, if any, experience in actual IMC. Most of the PIC's instrument-flying experience was acquired during training in simulated IMC and in the simulator.

² European Advisory Committee, *Operators Guide to Human Factors in Aviation*. Flight Safety Foundation (2009), available at <http://www.skybrary.aero/index.php/Portal:OGHFA> (last accessed 25 October 2013)

³ European Advisory Committee, "Press-on-itis" (OGHFA Briefing note), *Operators Guide to Human Factors in Aviation*, Flight Safety Foundation (2009), available at [http://www.skybrary.aero/index.php/Press-on-itis_\(OGHFA_BN\)](http://www.skybrary.aero/index.php/Press-on-itis_(OGHFA_BN)) (last accessed on 25 October 2013)

¹ Localizer performance with vertical guidance

This experience may not have presented the PIC with an accurate representation of the conditions and pressures faced in actual conditions.

The PIC chose to depart KWBW into forecast icing conditions despite the fact the aircraft was not certified for such operations. While en route, the pilot was informed of deteriorating conditions in the Ottawa area but chose to continue. This decision and the previous day's long flying schedule, combined with work and personal commitments, suggest the PIC may have been susceptible to the phenomenon known as "press-on-itis".

While on the ILS approach into Ottawa in unfamiliar night IMC, the pilot had significant difficulty maintaining the localizer. During the approach, the tower controller twice advised the pilot that the aircraft was deviating from the approach course. During the second attempt to regain the localizer, the pilot most likely made a steep right turn, which quickly developed into a rapid descent and loss of control.

Airframe icing could not be completely ruled out as a possible contributor to the loss of control, but the high airspeed (> 40 kt above the stall speed) that was maintained until the loss of control suggests that it was unlikely. Icing likely did not contribute to the aircraft's repeated deviation from the localizer and over-correction.

Finding as to causes and contributing factors

1. During an attempt to fly the precision approach at night in weather conditions unfamiliar to the pilot, control of the aircraft was lost and the aircraft collided with the ground.

Findings as to risk

1. If pilots possess limited currency and experience at night or in instrument flight conditions, the risk of a loss of control is increased when operating an aircraft in marginal weather conditions.
2. Non-recognition of the effects of the phenomenon known as "press-on-itis" can lead to increased risk that a decision will be made to depart or continue a flight when significantly less risky alternatives exist.

Other finding

1. The pilot did not meet the recency requirements for night flying with passengers.

This particular accident has created a lot of discussions in pilot lounges as well as on various online aviation blogs. Thought-provoking issues are addressed, challenged and debated. Such issues include the realities and challenges of IFR training, IFR qualification for commercial pilots as opposed to private pilots, giving and taking check rides, passing and failing those check rides, the need for actual IMC time, mentorship, IFR theoretical knowledge, pressure and the insidious effects of fatigue. While briefly mentioned in the report under "Factors affecting pilot decision making", one has to wonder whether fatigue could have been a contributing factor in this accident. Read again the pilots' schedules described in the report for December 13 (over 17 hours) and December 14 (close to 8 hours). Combined with very poor weather and the pressing desire to get home, the cumulative effects of fatigue may have played a role in this accident. Want to learn more from this accident and others? Hit the blogs, but check your feelings at the door. —Ed. △

Sustained Stall

by Mark Lacagnina. The following article was originally published in the August 2012 Issue of the Flight Safety Foundation's Aero Safety World magazine, and is reprinted with permission.

Blocked pitot tubes, excessive control inputs and cockpit confusion doomed Air France 447

Within four and a half minutes in the early hours of June 1, 2009, an Airbus A330-200 operating as Air France Flight 447 from Rio de Janeiro, Brazil, to Paris, departed from cruise flight at 35 000 ft and descended into the Atlantic Ocean, killing all 216 passengers and 12 crew members. Glimpses of what might have gone wrong emerged from several interim reports issued by the French Bureau d'Enquêtes et d'Analyses (BEA) during its long investigation of the accident. In July 2012, the bureau published a nearly 300-page final report providing a full picture of what likely happened during those critical moments.



According to the report, the trouble began when the A330's pitot tubes were obstructed by ice crystals, causing the various air data