

How This Small Mistake Killed Everyone? - The Heartbreaking Story of Air Canada 621

In aviation, safety isn't just built on skill. It's layered through countless small measures. Remove one, and nothing seems to happen. Remove several, and the result can be irreversible.

On a clear July morning, one simple action in the cockpit triggered a chain of failures no one could stop. Metal ripped apart, fire spread, and within minutes, a plane that should have landed safely was gone, taking everyone with it.

What turned a normal landing into a chain reaction no one could escape? And how did it begin so quietly that even the crew didn't see it coming?

Chapter 1: A Routine Flight in Perfect Skies

It was Sunday, July 5, 1970. Air Canada Flight 621 was scheduled to leave Montreal for Los Angeles, with a quick stop in Toronto. The aircraft assigned that day, a Douglas DC-8-63, tail number CF-TIW, was practically new. Delivered just ten weeks earlier, it had only 453 flight hours. To most passengers, that probably sounded reassuring.

The weather was flawless for flying: clear skies, light winds, and a summer haze over Ontario farmland. For a modern airliner, it was as close to ideal as it gets. The DC-8's four Pratt & Whitney JT3D engines could push the stretched fuselage across continents without breaking a sweat. There were 100 passengers and nine crew on board, each expecting a short, uneventful hop to Toronto.

Up front, the crew was experienced, even by the high standards of the time. Captain Peter Hamilton, 50 years old, had nearly 21,000 hours in his logbook, 2,899 of them in the DC-8. First Officer Donald Rowland, 40, had more than 9,000 total hours, over 5,600 on this type. Their flight engineer, Harry Hill, was younger but no rookie, with over 1,000 DC-8 hours himself.

On paper, it was the perfect mix: a capable aircraft, skilled pilots, and good conditions. But in aviation, accidents aren't born from what's wrong in plain sight. They start in the margins, where procedures are bent, and where small gaps in design and habit line up unnoticed.

That morning's gap was already in the cockpit. Not a broken part. Not a storm. A difference in how two experienced pilots thought a single control should be used. It had never been an issue before. But on that day, in the last seconds of flight, it would become the opening move in a chain reaction that no one could reverse.

Chapter 2: Cockpit Dynamics: A Long-Running Disagreement

The DC-8's ground spoiler system was simple in concept: after touchdown, panels on the wings would lift, "spoiling" lift so the aircraft's weight sat fully on the wheels. That allowed the brakes to work at their best.

Air Canada's Standard Operating Procedure was clear; arm the spoilers during the "before landing" checklist, usually when the aircraft was still 1,000 feet up. The system would then trigger automatically when the main landing gear compressed on the runway.

But Captain Hamilton didn't like that method. He worried that having the spoilers armed too early could risk an accidental deployment before landing; something that, on a jet like the DC-8, could cause a dangerous sink. His habit was to skip arming them entirely and instead deploy them manually, only once the aircraft was firmly down.

First Officer Rowland had a different preference. He would arm the spoilers later; during the flare, the gentle pitch-up just before touchdown. This, he felt, kept them disarmed for most of the approach but still gave the automatic system time to work once they touched down.

It wasn't just personal quirks. Many pilots at the time held similar private variations. In a regulated world, these were quiet rebellions, unapproved "improvements" born from comfort and repetition.

Hamilton and Rowland had flown together often enough to develop their own handshake agreement: if Hamilton was flying, Rowland would hold the Captain's preference, manual deployment on the ground. If Rowland was flying, Hamilton would arm them during the flare.

It seemed like a tidy compromise. But in reality, it replaced a single, standardized procedure with two personalized ones. In the most critical seconds of a landing, each man might be expecting the other to act differently. And that morning in Toronto, an ambiguous command from the Captain would bring that ambiguity into sharp focus, at just sixty feet above the runway.

Chapter 3: Approach to Toronto: The Moment of Error

The first leg from Montreal had been quiet. The cockpit voice recorder caught a light conversation between the pilots, even some idle whistling during cruise. In 1970, there was no *sterile cockpit* rule, so personal chatter mixed freely with operational calls, even during descent. As Toronto came into view, Air Traffic Control vectored Flight 621 toward runway 32, bringing them down to 8,000 feet.

The "in-range" checklist was done about 10 miles out. The "before landing" checklist followed a few miles later, but when it came to the spoilers, the crew didn't use Air Canada's published procedure. That part of the list was skipped over in the formal sense because they had their own informal arrangement.

As they turned final, the weather couldn't have been better: a light breeze, a few scattered clouds, and no turbulence. From the ground, the silver-and-red DC-8 would have looked like any other jet on approach. Inside, the pilots were lining up for what should have been a routine landing.

At around 60 feet above the runway, Captain Hamilton began to flare, easing back to reduce the descent rate. Then came the words that tipped the balance: *"All right. Give them to me on the flare. I have given up."*

It wasn't a standard call. It wasn't even their normal "agreement" for when Hamilton was flying. Rowland's first reply was, *"Spoilers on the flare"*; his own preferred method, before correcting himself: *"Or... on the ground."* But by then, his hands had moved.

Instead of arming the spoilers, he pulled the lever into the "extend" position, deploying them immediately, while still in the air. The result was instantaneous: the lift collapsed, and the jet sank hard toward the runway. In the CVR, Rowland's next words were an audible, pained: *"Sorry, Pete."*

The Captain shoved the throttles forward, trying to recover. The nose came up, but momentum was already carrying 315,000 pounds of aircraft toward the concrete at a dangerous sink rate. In less than a second, Flight 621 was going to hit the ground far harder than it was designed to.

Chapter 4: The Hard Landing: Damage in a Split Second

The DC-8 struck runway 32 so violently that the tail hit first, a tailstrike, while the right main gear slammed down hard. The outboard engine on that side, Number Four, tore away from its pylon. It hit the runway and tumbled down the asphalt, trailing debris.

The engine's violent separation ripped open part of the lower right wing. Fuel lines and tanks were ruptured, spilling thousands of pounds of jet fuel in an instant. Sparks from the engine strike ignited the spray. Flames began licking at the wing's underside even as the aircraft continued forward.

Inside the cockpit, the crew felt the jolt but had no clear picture of the damage. The strike lasted only about half a second before the aircraft bounced back into the air. From their perspective, it was a hard landing that could be salvaged. From the outside, smoke was already visible.

The spoilers, which had caused the sink rate, began retracting automatically as the wheels left the ground. With full thrust set, the jet climbed away from the runway. The Number Three engine, inboard on the right wing, was still attached, still producing thrust, masking the extent of the structural failure beside it.

In that moment, Captain Hamilton made the call: they would go around and try again. ATC was informed, but the tower replied that runway 32 was closed due to debris. Another runway would be assigned.

On paper, the decision made sense; go-arounds were a standard way to recover from unstable landings. But the damage Flight 621 had suffered wasn't the kind you could fly out of. The wing's integrity was compromised, a fire was already feeding off spilled fuel, and the aircraft had lost one of its four engines entirely.

Had they stopped on the runway, experts later concluded, they might have had a chance to evacuate. But airborne again, carrying a hidden structural fire, the countdown to complete failure had already started, and there were barely two and a half minutes left.

Chapter 5: The Go-Around That Sealed Their Fate

From the cockpit, the decision to go around felt logical. The jet was flying, three engines were still producing thrust, and the climb rate seemed normal. Captain Hamilton's voice on the radio was calm as he requested another landing attempt.

But ATC's reply changed the plan; runway 32 was now closed because debris from their first touchdown littered the pavement. The controller directed them toward another runway. That meant more time in the air.

Neither pilot yet knew that the number four engine's violent departure had ripped a gash into the wing, opening fuel tanks and damaging load-bearing structures. Fire was already racing along the right wing's internal cavity, hidden from their view.

As the DC-8 climbed, onlookers below began to see what the crew couldn't. Wisps of smoke trailed from the wingtip, followed by brief bursts of flame. At 3,100 feet, the aircraft leveled slightly, turning left to set up for the new approach.

In the cabin, passengers may have felt the acceleration push them back in their seats. Some would have seen the flicker of fire out the right-side windows. Few would have understood how little time remained.

In hindsight, investigators believed that stopping on the runway, even with one engine missing, could have allowed an emergency evacuation. Damage control crews on the ground might have had a fighting chance against the fire. But the moment the aircraft left the runway, that chance was gone.

From liftoff to the next critical failure, there were just two minutes and thirty seconds. The wing was weakening with every passing second. The heat from burning fuel was attacking the spars, the structural “bones” of the wing, and the metal could only hold for so long before it would fail completely.

The crew still believed they were managing a recoverable problem. But the next event would shatter any hope of getting back to the airport.

Chapter 6: Three Explosions: The Final Breakup

Two and a half minutes after the hard landing, the first rupture came. At 08:09:06, an explosion tore through the outboard section of the right wing, the area just beyond where Engine number 4 had been. Fragments of wing structure fell away, trailing smoke and debris toward the ground.

Six seconds later, the second explosion hit. This one erupted near Engine number 3, the inboard right engine still attached to the wing. The blast ripped it completely free along with its pylon, sending the burning engine plummeting into fields below. Heavy black smoke billowed from the gaping wound in the wing.

Another 6.5 seconds passed. The third explosion gutted what remained of the right wing. Flames roared from the fractured spars to the wingtip. With so much of the lifting surface gone, aerodynamic balance was impossible.

The DC-8 rolled sharply left, nose dropping into a steep dive. In the cockpit, control yoke inputs could no longer fight the asymmetric lift and drag. Airspeed built rapidly, over 220 knots, as the aircraft descended toward farmland north of the airport.

At 08:09:34, less than three minutes after the initial touchdown, Flight 621 slammed into a field near what is now Castlemore Road and McVean Drive. The impact carved an

8-to-10-foot-deep furrow in the soil. The explosion from the remaining fuel destroyed what was left of the airframe.

All 109 people on board died instantly. Wreckage and personal belongings were scattered hundreds of feet from the crater. In the nearest farmhouse, just 200 feet away, windows shattered from the blast.

The sequence from the first explosion to the final impact lasted only 28 seconds. From the crew's perspective, they had gone from flying a damaged but controllable jet to total loss in less than half a minute, a window far too short for any corrective action.

Chapter 7: The Investigation: More Than Pilot Error

The wreckage field in Brampton left little doubt about the violence of the impact. But it revealed nothing about the "*why*". For that, investigators turned to the DC-8's black boxes: the Cockpit Voice Recorder and Flight Data Recorder.

The CVR gave them the critical moment: sixty feet above the runway, the Captain's ambiguous instruction, the First Officer's reply, the click of the spoiler lever, and then his almost immediate: "*Sorry, Pete.*" The FDR confirmed what the crew had felt: a sudden loss of lift, an extreme sink rate, and the violent spike in forces on touchdown.

On paper, the cause looked clear: pilot error. The First Officer had deployed the spoilers in flight instead of arming them for automatic activation after touchdown. But the Board of Inquiry went further. Why was that even *possible*?

Douglas had designed the spoiler system without a safeguard to prevent manual extension in flight. The lever could be pulled back into the "extend" detent at any altitude. The Ministry of Transport had certified the design anyway. Air Canada had accepted it into the fleet. And neither the manufacturer's manuals nor Air Canada's operating procedures made it unambiguously clear that in-flight extension was both possible and dangerous.

Training compounded the gap. Pilots weren't explicitly taught that this action could happen, or that it would cause such an immediate loss of lift. And in this crew's case, years of shared deviation from SOPs had normalized a risk the system itself didn't guard against.

The Board didn't stop at the cockpit. They noted that the wing and pylon design allowed the number four engine's separation to tear open the fuel tanks, which was an avoidable vulnerability. There was no "safe separation" sequence or containment to prevent fire in such an event.

In other words, this wasn't one man's mistake. It was a chain where each link, design, certification, training, and procedural discipline, had a gap. On July 5, 1970, those gaps lined up perfectly.

Chapter 8: Legacy of Change: Safety Born from Tragedy

From the wreckage of Flight 621 came changes that touched nearly every corner of commercial aviation. The most direct was the installation of *weight-on-wheels* interlocks in spoiler systems. These sensors, triggered only when the landing gear is compressed, physically prevent ground spoilers from deploying in flight.

It's now standard in transport-category aircraft. In the months after the accident, manufacturers like Douglas issued service bulletins recommending retrofits across existing fleets, while regulators mandated compliance within set deadlines. Airlines worldwide treated the fix as urgent, knowing that every landing without it carried the same hidden vulnerability.

Structural lessons were just as important. The DC-8's wing and pylon design, which allowed an engine to rip open a fuel tank, became a case study in crashworthiness. Manufacturers strengthened pylon mounts, improved sequential separation designs, and re-routed fuel and electrical systems to protect them in extreme events.

These design upgrades didn't just stay on the DC-8; they informed the engineering of future widebodies like the Boeing 747 and McDonnell Douglas DC-10, where engine separations would be less likely to trigger catastrophic fuel-fed fires.

Procedurally, Air Canada revised its manuals to state clearly, and without room for interpretation, when and how spoilers should be armed. Training programs began emphasizing the absolute priority of standardized checklists over personal preference. The

cultural idea that “experienced pilots know a better way” began to erode under the growing discipline of SOP adherence.

The accident also fed into two broader industry shifts. One was the *sterile cockpit rule*, which eliminated non-essential conversation and distractions below 10,000 feet. The other was *Crew Resource Management*, a philosophy that improved communication, challenged authority gradients, and encouraged cross-checking without hesitation. Flight 621 became one of several case studies in early CRM training courses, illustrating how small misunderstandings in language and timing could escalate into unrecoverable situations.

Each change was a layer of protection aimed at closing the exact holes Flight 621 had slipped through. By the mid- 1980s, a similar chain of events was far less likely to happen, not because pilots were perfect, but because the system was better at catching their imperfections before they became fatal.

Today, when spoilers rise automatically after touchdown, or when a wing holds together after losing an engine, part of that safety is traced back to a clear July morning in 1970, and to the lessons paid for in full by everyone aboard Flight 621.

Chapter 9: The Human Cost: Recovery, Grief, and Memorialization

The crash site north of Toronto was a scar in the earth, an 8-to-10-foot-deep trench ending just 200 feet from a farmhouse. The blast shattered its windows. For recovery crews, the scene was almost incomprehensible: debris scattered hundreds of feet, personal items mixed with fragments of the DC-8’s structure, and human remains embedded deep in the crater.

All 109 aboard; 100 passengers, 9 crew, had been killed instantly. Among them were families traveling together, business travelers, and over 20 U.S. citizens bound for Southern California. Many were still in their seats when impact forces tore the aircraft apart. Some passengers had been celebrating milestones, anniversaries, first trips abroad, moments that would never be completed. The crew included veterans of thousands of hours in the air, now remembered by colleagues as mentors and friends.

Identification was slow, and for 52 victims, a mass burial was held on July 30, 1970, at Toronto's Mount Pleasant Cemetery. A stone monument was placed, engraved with all the victims' names.

Decades later, the story wasn't finished. In 2002, local resident Paul Cardin found wreckage and bone fragments at the crash site. Archaeologist Dana Poulton's team recovered hundreds more remains in follow-up searches. That discovery reignited public memory of Flight 621 and pushed for the site's formal recognition.

By 2009, a section of the land was registered as a cemetery. Four years later, Purple Lilac Memorial Park was opened; a 3,000-square-meter space planted with lilac trees. One hundred nine white granite markers, clustered to represent families, sit in black granite beds. A plaque lists every name.

For families, the memorial was more than stone. It was the physical acknowledgement of a loss that had spanned generations. Some came to see it as a place to finally put the grief they had been carrying since 1970.

Chapter 10: Closing Reflection: Lessons Etched in Stone and Sky

Flight 621 is remembered for how quickly it went from a routine landing to complete destruction, less than three minutes between first touchdown and final impact. But it's also remembered for the changes it set in motion.

The accident closed gaps in aircraft systems, rewrote procedures, and strengthened training. It pushed the industry toward safeguards like *weight-on-wheels* interlocks, clearer manuals, and stronger structural designs. It also nudged cockpit culture toward openness, standardization, and the discipline to challenge even a captain's habits when safety was at stake. In this way, Flight 621 became more than a cautionary tale; it became part of the DNA of modern aviation, its lessons embedded in every takeoff and landing around the world.

Yet beyond the technical legacy, Flight 621's story endures in quieter ways. In the names etched into granite at Purple Lilac Memorial Park. In the families who still visit. In the idea that every safety rule and every checklist item is written in someone's blood, and that

forgetting those origins risks repeating them. For many relatives, telling the story, even decades later, is not about reopening wounds, but about ensuring that the people lost on that flight are remembered for shaping a safer future.

Aviation today is safer than it was in 1970. But the chain of events that destroyed Flight 621 is a reminder that safety is never finished. It's maintained link by link, decision by decision, in cockpits, design offices, and maintenance hangars. It's the discipline to follow procedures when tired, to question small deviations before they grow, and to keep improving designs even when failure feels improbable.

The last lesson from that clear July morning may be the simplest: the difference between routine and catastrophe can be measured in seconds, and in something as small as a single hand motion. This story is dedicated to the memory of the 109 people who lost their lives on Air Canada Flight 621, and to the families and communities who have carried that loss ever since.

If you believe stories like this matter and that understanding what happened helps keep aviation safer for everyone, please consider supporting this channel. Like the video so more people can see it, share it with someone who values history and safety, and subscribe so you won't miss future investigations like this. Every view, every comment, helps keep these stories, and the people in them, remembered.