

Visibility over Ireland's Galway Bay was poor, and the ceiling was low. The Cessna 208B Grand Caravan was lower than indicated, and the relatively short coastal runway came into sight sooner than the pilot expected. A quick S-turn established the big single-turboprop aircraft on final approach, but during the flare the pilot became aware of a significant tail wind. The intermittent buzz of the stall warning system became continuous as the pilot pushed the propeller and power levers forward for a go-around. Torque effect from the propeller caused the aircraft to roll left toward rising terrain. Wallowing in a high pitch attitude on the back side of the power curve, the aircraft crashed on the side of a hill.

The accident occurred the afternoon of July 5, 2007, during a 9-nm

(17-km) flight from Inis Meáin, an island off the west coast of Ireland, to Connemara Airport in Inverin. The pilot and the passenger seated behind him were killed; the other seven passengers were seriously injured.

In its final report, the Irish Air Accident Investigation Unit (AAIU) said that the accident was caused by the pilot's attempt to land downwind in marginal weather conditions. "This resulted in a late go-around, during which control was lost due to inadequate airspeed," the report said.

Among the findings of the investigation were that the pilot did not establish radio communication with airport personnel before landing and thus was not aware of a substantial change of wind direction and velocity since an earlier departure from the airport.

Demo Flight

The aircraft was manufactured in 2005 and had accumulated 320 airframe hours and 275 cycles. It was registered as N208EC in the United States and was operated privately in Ireland under U.S. general operating and flight rules. Wells Fargo Bank Northwest of Salt Lake City was the registered owner or "trustee" of the aircraft, and Lancton Taverns of Dublin was the "beneficial owner" or "trustor," according to the report, which noted that such arrangements are "widespread practice."

The aircraft services intermediary who managed the aircraft's maintenance records and flight schedule told investigators that, due to the complexity of the Caravan, an air operator certificate likely would be required to operate the aircraft under European

SHORT FLIGHT,

BY MARK LACAGNINA

Joint Aviation Requirements. “He said that it would therefore be more expensive to operate the aircraft under Irish registry,” the report said.

The report said that the “owner” of the Caravan had accepted a request made through the aircraft services intermediary to loan the aircraft and its pilot to conduct a demonstration flight for a group of investors and associates involved in the proposed development of an airport in Clifden, about 25 nm (46 nm) northwest of Inverin.

The intermediary also asked an aircraft maintenance specialist and former lightplane pilot to take part in the demonstration flight and provide an audiovisual presentation about the Caravan to the group, who also were considering the purchase of a light utility aircraft.

The pilot, 59, an Irish national, held a U.S. commercial pilot certificate and had 9,001 flight hours, including 476 hours in type. The pilot and the maintenance specialist departed from

Permission Required

The runway at Connemara Airport is 609 m (1,998 ft) long and 18 m (59 ft) wide. There are no navigational aids at the airport, which is uncontrolled and open only during the operating hours of Aer Arran Islands, which conducts commercial flights to the islands in Galway Bay with Britten-Norman Islanders.

Prior permission is required to land, and landing is prohibited if the pilot is unable to establish radio communication with airport personnel on 123.0 MHz. “However, the frequency is not usually manned unless a flight is expected,” the report said.

After a brief discussion with airport ground staff, the pilot and the maintenance specialist conducted a visual flight rules (VFR) familiarization flight to Inis Meáin — the pilot’s first trip to the island — and then returned to Connemara Airport to await the passengers. “This time they approached from over the sea and landed on Runway 05,” the report said.

The pilot was surprised to see the runway pop into view, but he went for it, not knowing that the wind had shifted.

LONG ODDS

Dublin at 0920 local time and landed at Inverin about an hour later. The flight was conducted under instrument flight rules.

The pilot had flown to Connemara Airport seven times during the preceding 12 months. The maintenance specialist recalled that the flight was normal but that weather conditions deteriorated as they neared the airport. “As far as he could remember, they approached from over land and landed on Runway 23,” the report said. “He remembered the pilot commenting that he preferred to land from the other direction, from over the sea, due to the terrain and that he was not happy with approaching from the land direction.”

When the Clifden airport group arrived, the pilot found that there were too many people to accommodate with one flight. He decided to make two flights to transport them to the island. The pilot departed with the first load of passengers at about 1130. The maintenance specialist occupied a rear seat during this VFR flight.

“A passenger who had previously piloted both fixed-wing and helicopter aircraft occupied the copilot’s seat on the flight out,” the report said. “He commented that the pilot appeared quite professional and diligently completed cockpit checks prior to departure. There was a significant crosswind during takeoff.”

The passenger said that the pilot flew a complete approach pattern before landing at Inis Meáin. “The passenger commented that runway alignment for landing was accurate and the landing was good,” the report said. “The weather was poor, and there were two tall cranes close to the extended centerline of the runway, associated with constructing a harbor on the island. He believed that the pilot was unhappy with such significant obstacles in the vicinity of [the airport] in conditions of poor visibility.”

Cessna 208B Grand Caravan



Production of the Cessna 208 Caravan 1 — a fixed-gear utility airplane with a single Pratt & Whitney PT6A-114 engine rated at 600 shp (447 kW) — began in 1984. A cargo version, the 208A, with no cabin windows and a belly pod, was introduced in 1985. A stretched version of this model, the 208B, appeared in 1986 with a 4.0-ft (1.2-m) fuselage plug aft of the wing and a PT6A-114A engine rated at 675 shp (503 kW).

The Grand Caravan, a passenger version of the 208B, has accommodations for a pilot and as many as 13 passengers. Maximum weights include 8,750 lb (3,969 kg) for takeoff and 8,500 lb (3,856 kg) for landing. Minimum runway distances are 1,100 ft (335 m) for takeoff and 745 ft (227 m) for landing. Maximum rate of climb is 1,234 fpm. Maximum cruise speed is 184 kt, and maximum range is 1,026 nm (1,900 km).

The current version is the Caravan 675, which has the 208/208A's shorter fuselage and the 208B's engine.

Source: *Jane's All the World's Aircraft*

Not Comfortable

The maintenance specialist said that there were low clouds over the bay. “He said the pilot decided that, because the weather conditions were very gusty and blustery, he was not prepared to return to [Connemara Airport] to collect the rest of the group,” the report said. An Aer Arran Islander was chartered to fly the remaining seven passengers to Inis Meáin. The passengers were weighed and received a safety briefing before departure.

The Islander pilot had accumulated 4,000 hours of experience in flying Islanders in the area. He said that after landing, he heard one of the passengers comment to the Caravan pilot that the Islander had made the trip, “so why couldn't you?” The Islander pilot told investigators he believed that “this went down very badly with the [Caravan] pilot.”

After lunch at a local hotel, the group received the presentation about Caravan performance and cost factors. The pilot helped the maintenance specialist answer questions about operating the aircraft. “During the meeting, the pilot indicated that he was not comfortable in the area and specifically mentioned cranes on the island and the poor weather,” the report said. “One passenger stated that the pilot commented over lunch that he did not like flying in the area, as there were no radio aids.” Another passenger said the pilot also commented that he would “not be pressured when it comes to safety.”

Two members of the group left during the presentation to attend a meeting on the mainland; they were flown to Inverin by the Islander pilot, who then flew back to the island to assist in returning the remainder of the group to Connemara Airport.

‘Quite Low’

After the presentation was concluded, the seven passengers who had been flown to Inis Meáin in the Islander were invited to return to Inverin in the Caravan. The aircraft departed VFR at 1335. The maintenance specialist again occupied a rear seat so that he could talk with

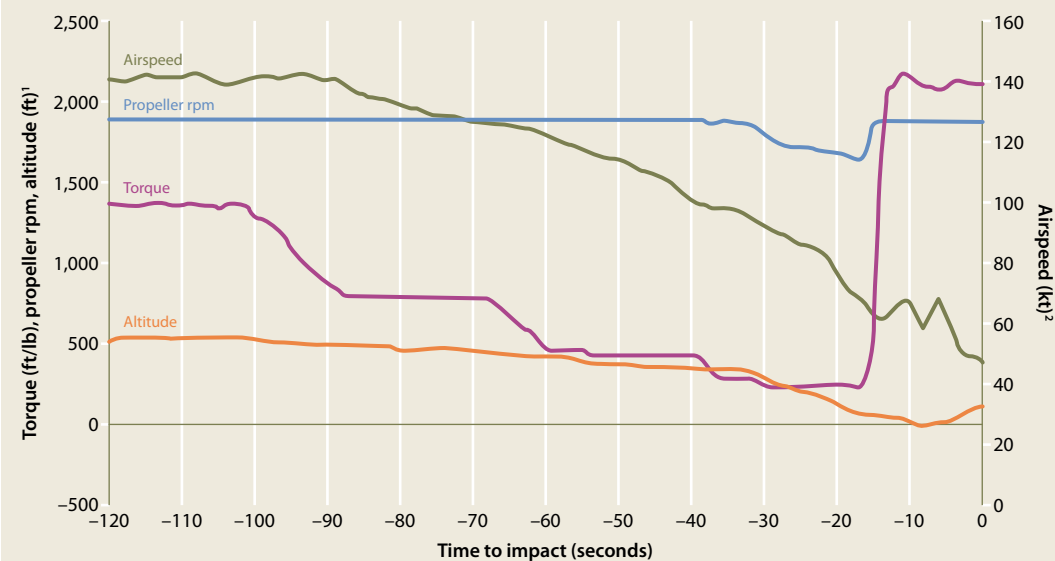
the passengers during the flight. “He believed they did not enter cloud during the flight, but the windows had misted over,” the report said. “He could see the surface of the sea and that they were quite low.”

The passenger in the right-front seat, who was not a pilot, said that it was wet and damp, and that the aircraft entered clouds during departure. “He believed the autopilot was engaged, because when the pilot selected 1,000 ft the aircraft climbed up to it,” the report said. About four minutes later, he heard the pilot make a radio call before setting the altitude selector to 800 ft.

The passenger said that when the aircraft broke out of the clouds, he saw the shoreline about 2 km (1 nm) ahead and the airport at least 500 m (1,640 ft) left of track. “He said the pilot expressed surprise that they were so close to the runway,” the report said. “He could see the ocean and thought they were going very fast. The pilot, manually flying the aircraft, turned left — to a right base leg for Runway 05 — and started to lose height. He then ‘swerved right’ to line up with the airstrip.”

The passenger perceived that the aircraft was still traveling rapidly as it neared the runway and saw the pilot move two levers forward and pull back on the control wheel. He said that the aircraft made a steep left turn, did not appear able to climb, then “stopped and started to fall.” Several passengers recalled a beeping sound that became continuous during the attempted go-around.

The Final Seconds



Notes:

- 1 Error: ± 75 ft
- 2 Error: ± 5 kt

Source: Irish Air Accident Investigation Unit

Figure 1

Torque Roll

The report said that the pilot likely initiated a go-around when he realized that he would not be able to stop the aircraft on the runway. His rapid application of power caused torque to increase within two seconds from 376 ft/lb to 2,060 ft/lb, exceeding the limit by 13 percent (Figure 1).

There was a clearway off the end of Runway 05 and terrain sloping down to the sea to the right, but torque effect caused the aircraft to roll left in the direction of terrain that sloped up toward the airport buildings (Figure 2, page 42).

The Caravan’s nose-up pitch attitude was abnormally high, and airspeed was about 46 kt on impact. The report said that this is “symptomatic of an aircraft hovering at the back of the drag curve, where the power output of the engine was incapable of accelerating the aircraft out of the high drag regime.”

An airport operations staff member told investigators that he was on the ramp when he heard “engine noise really revving up and then a bang.”



Figure 2

He went behind a hangar, saw that the aircraft had crashed and activated the airport fire alarm.

The Caravan was destroyed in the accident, which occurred at 1449. Fuel leaked from the wing tanks, but there was no fire. Aircraft rescue and fire fighting personnel arrived soon after the crash. "They did not lay a foam blanket as there was no fire or smoke, and they thought it might affect the casualties on board and hinder the rescue effort," the report said. "The airport emergency plan was put into operation with medical, fire and ambulance services being notified, and they endeavored to evacuate as many casualties as they could without endangering them.

"Several casualties could not be extracted because of their injuries. [County] fire tenders arrived later, bringing heavy cutting equipment, which assisted in the casualty evacuation."

Low and Over Gross

An aftercast prepared by Met Éireann, the Irish meteorological service, indicated that the weather conditions in the Inverin area at the time of

the accident likely included surface winds from 220 degrees at 15 to 20 kt with occasional gusts of 25 to 30 kt, visibility ranging from 2,000 to 5,000 m (1 1/4 to 3 mi) in light rain, and ceilings from 500 to 1,000 ft with occasional scattered clouds at 200 ft.

Atmospheric pressure had fallen rapidly during the day; however, the Caravan pilot had not reset the altimeters after his first landing at Connemara Airport. "Because this was not done, the altimeters misread the height by 224 ft," the report said. "Therefore, while the pilot was flying an indicated altitude of 800 ft, he was in fact much lower, less than 600 ft."

A load and trim sheet for the accident flight was not found. Based in part on the passenger weights recorded by Aer Arran for the Islander flight to Inis Meáin, investigators estimated that the Caravan was 293 lb (133 kg) over maximum landing weight and that the center of gravity was near the aft limit when the accident occurred.

"The investigation is of the opinion that the heavy landing weight of the aircraft, with slow deceleration during the attempted landing and a subsequent slow acceleration during the go-around due to inertia, was a contributory factor in the accident," the report said.

The Islander had departed from Inis Meáin several minutes after the Caravan. The Islander pilot tried unsuccessfully to establish radio communication with the Caravan pilot on 123.0 MHz but heard a helicopter pilot report on the frequency that he was transiting the area south of the airport.

The Islander pilot reported his position and altitude, and advised the helicopter pilot that the Caravan also was inbound to the airport. The helicopter pilot told investigators that he did not recall hearing any radio transmissions by the Caravan pilot. The Islander pilot returned to Inis Meáin after airport personnel told him about the accident.

"The [Caravan] pilot, though he may have attempted to do so, did not communicate his imminent arrival to [airport] staff and so lost the opportunity of being informed of the changed wind direction," the report said. ➤

This article is based on AAIU Formal Report No. 2009-003, published Jan. 20, 2009.