



Australian Government

Australian Transport Safety Bureau

Collision with water involving Textron Aviation (Cessna) 206, VH-AEE

near Happy Valley, Fraser Island, Queensland on 29 January 2020



ATSB Transport Safety Report

Aviation Occurrence Investigation (Defined)

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Addendum

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Safety summary

What happened

At 1322 Eastern Standard Time, on 29 January 2020, a Cessna Aircraft Company U206G, registered VH-AEE and operated by Air Fraser Island with two pilots onboard, was being used for landing emergency procedure training on a beach aircraft landing area (ALA) on Fraser Island, Queensland.

Just after touching down, the aircraft veered significantly to the left, toward the sea. The training pilot took control of the aircraft and conducted a go-around. Once airborne it was identified that the rudder was jammed in the full-left position and the pilot had to apply full opposite aileron to maintain control. The engine subsequently stopped and the aircraft collided with water. The pilots escaped the aircraft and swam to shore. The aircraft was destroyed.

What the ATSB found

The ATSB found that, following touchdown, a section of the nose landing gear attachment failed, resulting in the rudder becoming jammed in the full-left position. Due to the aircraft's significant deviation towards the water, a go-around was initiated. While there was only a short timeframe to make the decision to abort the landing, it resulted in flight over water with significantly reduced aircraft controllability that required uncoordinated flight control inputs to control the aircraft.

It was also identified that fuel starvation, due to either the uncoordinated flight or damage associated with the nose gear failure, led to the engine losing power at a height too low for recovery and the aircraft collided with water.

The ATSB also identified two safety issues associated with the Cessna 206 that, while not contributory to this accident, can lead to fatal consequences in the event of a ditching.

Firstly, the Cessna 206 procedure for ditching and forced landing stated that the flaps were to be extended to 40°. While that permitted the aircraft to land at a slower speed, it also significantly restricts emergency egress via the cargo door. However, there is no warning about that aspect in the ditching or forced landing pilot's operating handbook emergency procedures.

In addition, the Cessna 206 with the cargo door does not meet the aircraft certification basis for the design of cabin exits, due to the complexity associated with opening the cargo door if it is blocked by the flaps. This significantly hampers emergency egress and has previously resulted in fatalities.

What has been done as a result

The ATSB has recommended that Textron Aviation take safety action to address the procedure for ditching and forced landing in the pilot operating handbook for the Cessna 206, to ensure pilots are aware that extending the flaps beyond 10° will significantly restrict emergency egress via the cargo door.

The ATSB also recommends that the United States Federal Aviation Administration and the Civil Aviation Safety Authority take safety action to address the certification basis for the design of the cargo door in the Cessna 206, as wing flap extension beyond 10° will block the forward portion of the rear double door, significantly hampering emergency egress.

In addition, and as a result of this accident, the operator has changed their procedures to specify that during emergency procedure training on the beach, no non-company vehicles are permitted to operate within the runway complex. They have also reassessed the company hazard register and included brake failures.

Safety message

This occurrence highlights the issue of evacuation through the cargo door when the flaps are extended in the Cessna 206. Pilots should be aware that lowering the flaps will block this exit and significantly increase the difficulty of opening the door. Consequently, all passenger pre-flight briefings should include a practical demonstration of how to open a partially-obstructed cargo door. Additionally, in the event that a ditching is required, pilots should consider not extending the flaps.

Furthermore, in 2009, research by the Transport Safety Board of Canada found that in the previous 20 years, where an aircraft had collided with water, 70 per cent of fatalities were caused by drowning. That statistic reflects the inherently disorientating nature of underwater exit from an often-inverted aircraft.

Transport Canada released [TP 2228E-18 \(04/2003\)](#), an 'underwater egress' safety guide which was forwarded to all Canadian operators of passenger carrying operations operating on water. This guide was to be provided to passengers before flight to increase their likelihood of survival in the event of a ditching.

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The occurrence

At 1322 Eastern Standard Time,¹ on 29 January 2020, a Cessna Aircraft Company² (Cessna) U206G aircraft, registered VH-AEE (AEE) and operated by Air Fraser Island, was being used for emergency procedure training at a beach aircraft landing area (ALA), south of Happy Valley, Fraser Island, Queensland (Figure 1). There were two pilots onboard, including a trainee pilot (trainee), who had just commenced flying with the company. The trainee was seated on the left and was flying the aircraft.

Figure 1: Accident location



Source: Google Earth annotated by ATSB

The crew were simulating failure of the left main wheel brake during the landing phase. Just after the aircraft touched down, the trainee heard a snapping noise and the aircraft immediately veered left, towards the sea. The training pilot reported that, on taking control of the aircraft, their³ rudder pedals were 'lying on the floor'. However, there was no change in the aircraft's pitch or bank attitude, as would be expected if a major component of the landing gear had failed.

The training pilot immediately applied full power to conduct a go-around. The aircraft lifted off just before the water's edge and struck a number of waves as it began to climb. The trainee advised that full aileron deflection was required to keep the wings level. The aircraft continued to climb to a height where the training pilot felt comfortable. They then lowered the nose to gain airspeed and reduced the flap, one stage at a time, to 20°. The training pilot advised that as the airspeed increased above 70 kt they encountered difficulties controlling the aircraft's roll, despite having full aileron deflection, so they reduced the power to maintain around 65–70 kt. About 150 m from the

¹ Eastern Standard Time (EST): Coordinated Universal Time (UTC) + 10 hours.

² The current type certificate holder is Textron Aviation.

³ Gender-neutral plural pronouns are used throughout the report to refer to an individual (i.e. they, them and their)

shore, they turned the aircraft north to parallel the beach. At that stage, the aircraft was maintaining a height of 150–300 ft above the water.

Both pilots then began to troubleshoot the control issues and identified that the flaps had raised symmetrically, and the rudder was jammed and fully deflected to the left. That control position resulted in significant uncoordinated flight (sideslip) to maintain control of the aircraft.

The training pilot advised the trainee that they were going to land back on the beach however, a short time later, estimated to be about 1.5 minutes after commencement of the go-around, the engine stopped. The trainee advised there was about 5–6 seconds before the aircraft contacted the water. The training pilot had time to lower the nose and change fuel tanks from the right to the left tank, but not enough time to attempt to restart the engine.

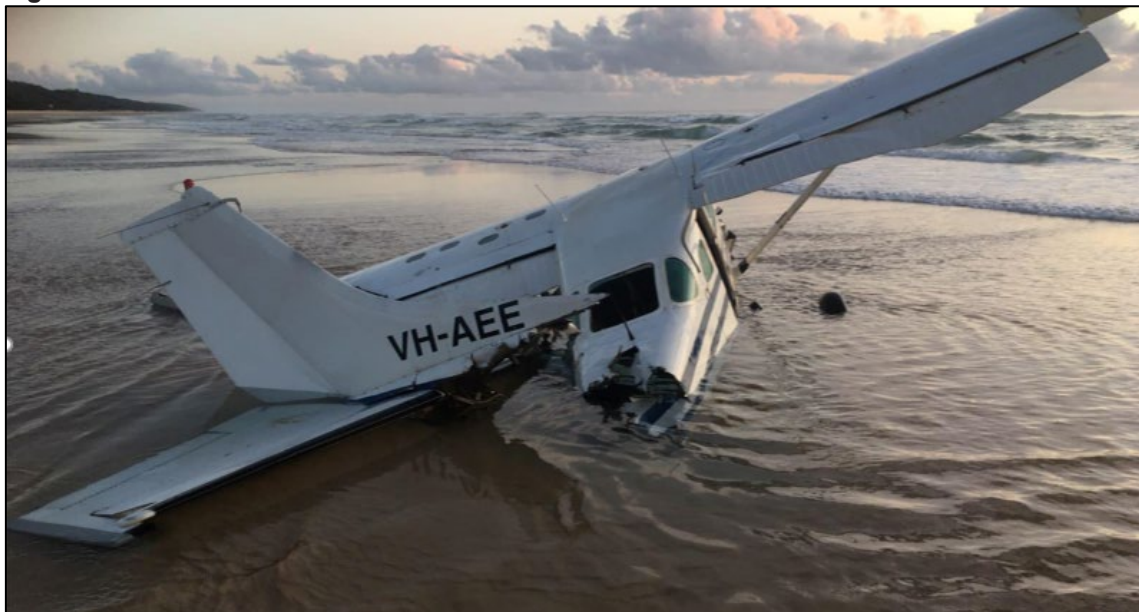
After hitting the water, the aircraft remained upright, and the cabin quickly began to fill with water. Both pilots undid their seatbelts and the trainee tried unsuccessfully to open the single front pilot door (see the section titled *Emergency egress in the U206*). When the door could not be opened, the training pilot climbed over the seats into the rear cabin, kicked the cargo door to force it open, and then tried unsuccessfully to locate the trainee pilot in the aircraft. The training pilot then exited the aircraft via the cargo door.

Once outside, the training pilot could not locate the trainee so they re-entered the aircraft, which was then three quarters submerged. As the trainee could not be located, they exited a second time taking hold of a life jacket as it floated past. During this time, the trainee had opened and climbed out the pilot door window.

The training pilot then observed the trainee on the other side of the aircraft and after making them swim around the aircraft, put the life jacket on them. The training pilot subsequently put their arm through the life jacket and they both started swimming back to shore. They were met by a paramedic from the Happy Valley ambulance station who had entered the water to assist them to shore. Both pilots suffered minor injuries and the aircraft was destroyed (Figure 2).

It was reported that the aircraft's nosewheel leg was found on the beach on the afternoon of the accident, approximately half-way between where the go-around commenced and where the aircraft collided with water. The aircraft, without the engine, washed up on the beach the morning after the accident. At the time of writing, the engine had not been recovered (Figure 2).

Figure 2: VH-AEE on the beach at Fraser Island



Source: Operator

Context

Flight crew

The training pilot held a Commercial Pilot (Aeroplane) Licence with a Class 1 Aviation Medical Certificate. They had accrued over 10,200 hours of which around 5,000 hours were accumulated in the Cessna 206. At the time of the accident, they had been awake for around nine hours and advised feeling 'fine' on the day.

The trainee held a Commercial Pilot (Aeroplane) Licence with a Class 1 Aviation Medical Certificate. They had accrued around 500 hours flying. At the time of the accident, they had been awake for about nine hours and had self-assessed their fatigue level at '2: very lively'.⁴ They advised that as part of their training they had completed the theory section of the emergency procedures training detailed in Civil Aviation Orders 20.11. They had previously been operating as a ground crew member on Fraser Island for the operator for several months and were proficient in the emergency procedure briefing for the aircraft and the use of life jackets.

Aircraft information

General details

The Cessna U206G is a single engine, six seat, high wing aircraft with fixed undercarriage. It is powered by a Teledyne-Continental Motors six-cylinder, horizontally opposed, fuel-injected piston engine with a constant speed propeller. The aircraft had modifications to improve the short take-off and landing (STOL) capabilities.

AEE was manufactured in the United States in 1979 and first registered in Australia in the same year. The aircraft was maintained in accordance with the Civil Aviation Safety Authority (CASA) maintenance schedule, which required a periodic inspection every 100 hours or twelve months, whichever came first. It had undergone a periodic inspection on the 14 January 2020 and had a valid maintenance release. At the time of this inspection, the aircraft had accumulated about 13,725 hours in service. The operator advised they had purchased the aircraft two weeks prior to the occurrence.

Fuel system

The fuel system consists of left and right wing-mounted fuel tanks, which feed into separate fuel reservoir tanks. The pilot uses the fuel selector to select fuel from either the left or right reservoir tank. The fuel then passes from the selected reservoir tank into the engine through an auxiliary fuel pump, fuel strainer, engine driven fuel pump and fuel control unit.

The pilot operating handbook stated that, with a quarter tank or less, 'prolonged uncoordinated flight such as slips or skids can uncover the fuel tank outlets, causing fuel starvation and engine stoppage'. This can occur with uncoordinated flight in excess of one minute.

The pilots reported they had departed Sunshine Coast Airport that morning with full fuel tanks. The trainee reported they had conducted approximately 1.5 hours flying before arriving at Hervey Bay Airport. The training pilot advised they had departed Hervey Bay Airport at approximately 1200. The accident occurred at approximately 1322. The training pilot reported that they had been changing fuel tanks every half hour. While the specific amount of fuel at the time of the accident could not be determined, based on the described flight sequences it is likely that each tank was about one third full.

⁴ The ATSB uses the Samn-Perelli fatigue scale from 1 (Fully alert. Wide awake. Extremely peppy) to 7 (Completely exhausted. Unable to function effectively. Ready to drop).

Weight and balance

The aircraft was within the weight and balance limits at all stages of the flight.

Steering and brake system

The rudder pedals of both control positions are interconnected by torque tubes. The nose wheel steering system links the rudder pedals to the nose wheel steering arm, through a spring-loaded steering bungee. This allows steering control on the ground using the rudder pedals and brakes. The steering bungee limits the turning of the nose wheel to 15-20°. Additionally, the nose wheel is locked straight ahead when there is no weight on the wheel.

The rudder system is also connected to the rudder pedals through the torque tubes. The torque tubes connect directly to the rudder via cables, and to a steering bellcrank, via pushrods, to form a closed loop system.

The brake system consists of a single disc, which has a hydraulically actuated brake, on each main landing gear wheel. The brake is operated by pressing the top of the rudder pedal. The right-seat brakes are connected to the left-seat brakes by torque tubes located inside the rudder pedal torque tubes. Hence, applying the right brake on the right-seat pedal moves the right brake on the left-seat pedal, which then actuates the right brake master cylinder.

Stowable right-side pedals were an option on some models however, AEE had standard rudder pedals installed.

Damage to aircraft during accident sequence

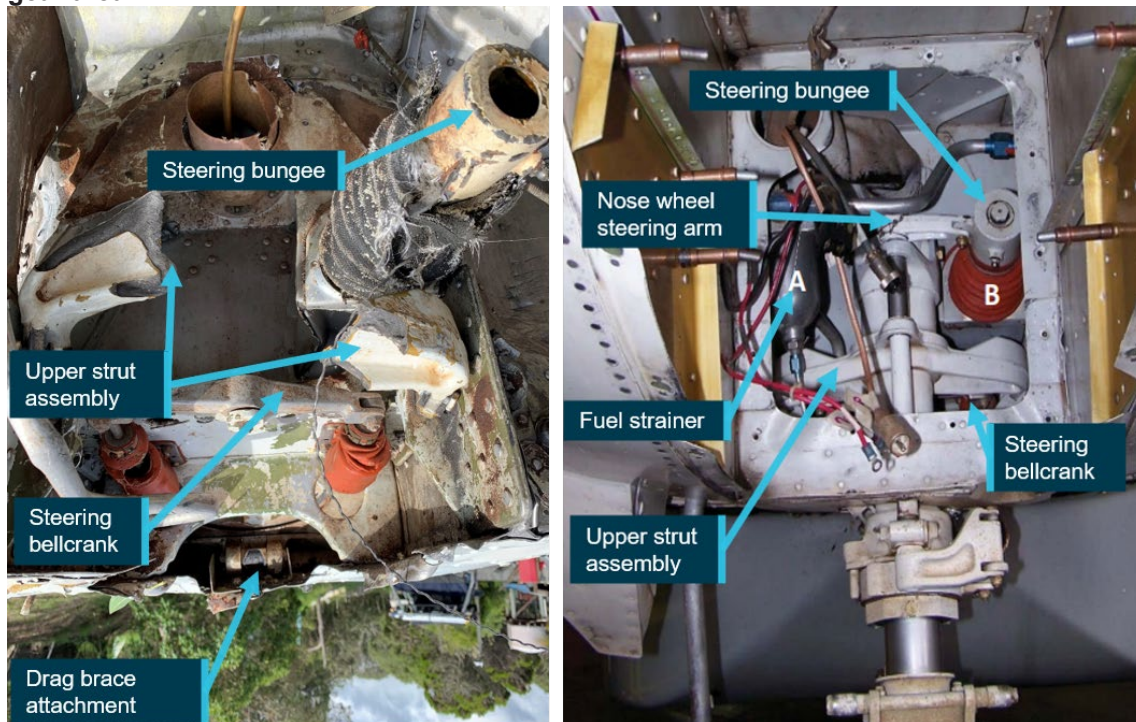
While the ATSB did not attend the accident site, a review of supplied images identified the following damage to the nose landing gear area (Figure 3 and Figure 4):

- the nose wheel assembly had detached at the upper strut assembly and the steering bungee had separated
- the drag link had fractured at both ends
- both lower trunnion braces had fractured at their attachments
- the fuel line to the fuel strainer had fractured and fuel strainer bowl was missing.

From the photographs of the aircraft, all fractures appeared to be overstress failures with no evidence of pre-existing damage. However, it could not be determined which failure occurred first.

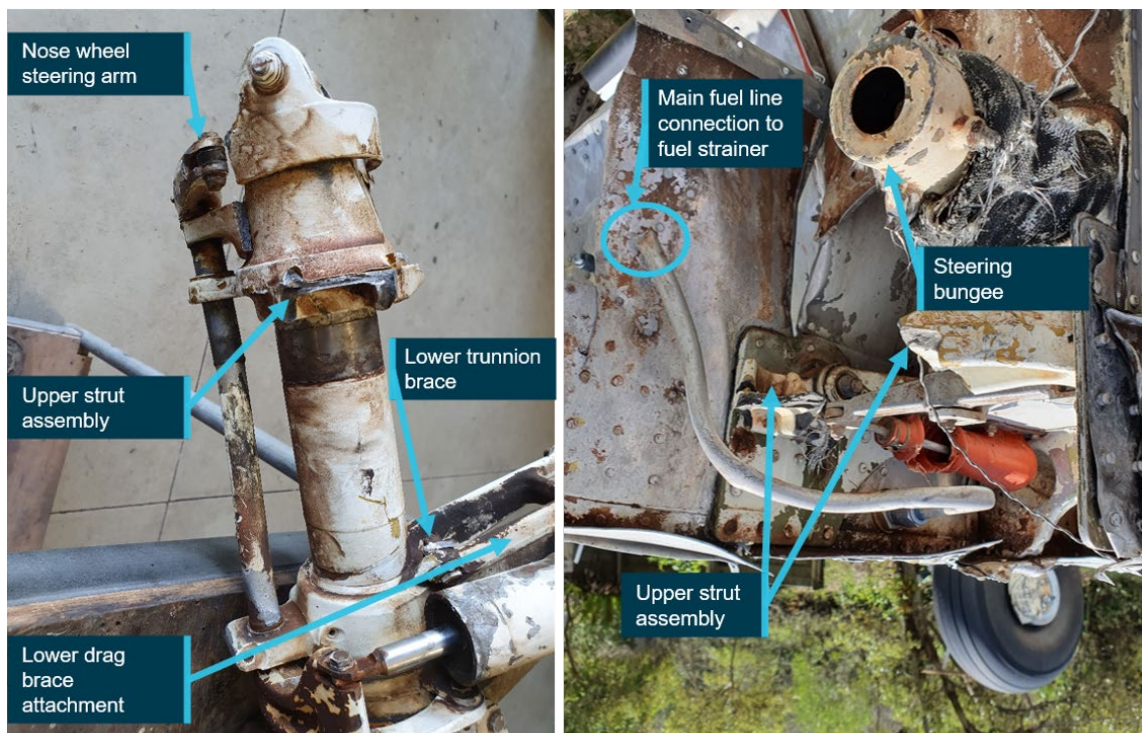
The rudder cables were also found to be intact and connected at both the forward and aft cable ends.

Figure 3 : Nose landing gear area (image rotated 180°) and exemplar C206 nose landing gear area



Source: Supplied, annotated by ATSB

Figure 4: Nose landing gear leg and front of aircraft showing the main fuel line (image rotated 180°)



Source: Supplied, annotated by ATSB

Recorded information

The aircraft was not fitted with a recording device nor was it required to be. A witness supplied video footage of the final portion of the flight. It showed that the aircraft was maintaining level flight before it suddenly lost altitude, which was consistent with both pilots' recollection of events. It also

showed the aircraft initially floated upright on the sea surface, which most likely assisted the pilots to evacuate the aircraft.

Weather conditions

The graphical area forecast for the area indicated visibility was greater than 10 km with scattered⁵ cloud above 2,000 ft. The terminal area forecast for Hervey Bay, about 31 km west of the Happy Valley ALA, indicated the wind was from the east-north-east at 8 kt. The supplied video footage showed clear skies with a light sea chop. The training pilot advised the ocean was flat, with 1.2 m sets of waves with no wind. The current was running along the beach, from north to south.

Beach landing area

The operator used the criteria specified in Civil Aviation Advisory Publication 92-1(1) [Guidelines for aeroplane landing areas](#) to establish ALAs at various locations on the eastern beach on Fraser Island. These were set up, on the day, by trained ground crew. The pilots reported that the ALA was low on the beach with firm, hard sand. The ATSB did not attend the ALA after the accident and could not verify its condition.

Operator training

The operator regularly conducted sightseeing and passenger transfer flights from different locations along the eastern beach at Fraser Island. Their operations manual required that a passenger briefing be conducted prior to every passenger flight. This was to include the use of life jackets along with the location of, and the procedure to operate the emergency exit.

The operations manual had a section which outlined the training for the ground handling personnel. This section required that ground personnel be proficient in the use of all emergency exits in aircraft used in beach operations.

Newly employed pilots were required to complete pilot induction training, which included at least 15 hours of training in operating on the beach. In addition, pilots were required to undergo a beach-operations check every 90 days and a six-monthly route check.

The operator had a section in their operations manual which outlined their pilot training syllabus, covering all aspects of training. In the pilot induction training section, the syllabus specified that, along with other competencies, brake failure and asymmetric braking would be covered during the theory training, with no mention of simulated brake failure training in the practical syllabus. Despite this, the operator advised they always conducted simulated brake failures on the beach during the practical flying training. There was no information in the operations manual on how the brake failure simulation was to be conducted.

The operator advised they had devised their own method for brake failure training. To simulate the brake failure, after landing and with all three wheels on the ground, the flying pilot would apply full rudder on the side they were simulating as failed and then use the opposite brake to maintain directional control. That is, a simulated left brake failure required full deflection of left rudder pedal and the use of right brake to slow the aircraft and control direction and vice versa for simulation of right brake failure. The training pilot advised that they used this method, as the turning force associated with full brake application on one side was greater than the turning force created by the rudder and could result in the aircraft running off the side of the runway.

CASA had approved the operator's operations manual, which included the operator's pilot training syllabus. When questioned about the brake failure training being conducted by the operator, CASA stated 'all pilots are taught basic "asymmetric brake failure recovery techniques" from an early stage in the flying training...' but advised they had not observed the operator's brake failure

⁵ Cloud cover: in aviation, cloud cover is reported using words that denote the extent of the cover – scattered indicates that cloud is covering between a quarter and a half of the sky.

training method in the aircraft. They advised that brake failure training is normally conducted while taxiing rather than the landing phase of flight. CASA also advised that:

Due to the safety risks associated with the simulation of an asymmetric brake condition different training techniques may be used to simulate the failure that mitigate the safety risks, in the same way CASA expects flight training operators to manage the safety risks associated with flight training activities. As there was no guidance in the aircraft flight manual on the simulation of asymmetric brake failure the operator should have included clear guidance and procedures on how such activities were to be conducted.

The operator used Mahindra Airvan 8 (formerly GippsAero GA8 Airvan), Cessna 206 and 172 aircraft and advised that they conducted simulated brake failure training in all three aircraft types.

The ATSB sought Textron Aviation's (type certificate holder for the Cessna 206) views on this type of simulated brake failure training. In response, they advised that they did not have an opinion about training.

A search of the ATSB database and CASA defect reporting service, between 2000 and 2020, did not identify any brake failures having been reported by the operator.

Effect of simulated brake failure training on nose wheel

In the Cessna 206 and 172, the nose gear steering is designed so the nose wheel is held with zero steering deflection while the gear strut is fully extended, regardless of rudder pedal deflection. Nose wheel steering is only available once the nose strut deflects and then it is only influenced by the steering bungee loads. The application of full rudder pedal deflection on the ground will only result in 15–20° of nosewheel deflection. However, for aircraft with direct nose gear steering linkages, such as the Airvan 8,⁶ this could mean that the steering angles on the nose wheel could be much higher.

Aircraft design requirements account for fore/aft and side loads on the nose gear based on towing and tyre friction over a variety of hard surfaces. The friction properties of sand are likely to be low initially. However, if ploughing were allowed to develop the side loads on the nose wheel could be relatively high. For a wheel that can only turn 15–20°, this effect is not likely to develop to any great extent. However, for aircraft with direct steering linkages, the loads may increase significantly.

Differential braking is permitted and designed into the braking system. It does not produce any additional loads on the airframe other than side load on the nose gear, but this would be proportionally low. Therefore, stopping the aircraft with brakes from one wheel of the aircraft would not be damaging.

It was difficult to determine whether the side loads on the nose wheel would exceed the design requirements in the Airvan 8. As this was not the aircraft type involved in the accident, further consideration of this aspect was outside the scope of the investigation.

Operator training on accident flight

The training being conducted at the beach landing area consisted of flapless landings and simulated brake failures during landing. The crew advised that, as there was very little wind, they were taking off and climbing to 500 ft before conducting a teardrop turn to land back on the ALA in the opposite direction. They were conducting flapless landings when landing to the north and simulating a brake failure during the landing to the south. They advised they had conducted at least five simulated brake failure landings that day, with no problems encountered.

⁶ During the operator's described simulated brake failure training, it was assumed that the initial touchdown was conducted using the rudder inputs required to keep the aircraft straight.

Operator's safety management system

While not required by CASA, the operator had begun to introduce a safety management system (SMS) into their organisation in about 2013. This was incorporated into their operations manual which was divided into sections including one on the SMS and a section on specialised operations. The SMS section included procedures for a hazard identification process and included the statement 'hazards can only be mitigated and controlled if their existence is known'.

The specialised operations section included information and procedures for beach operations. It identified that, due to operation in the harsh beach environment, special attention should be paid to the brakes in the pre-flight inspection. Despite this special attention and additional regular brake failure training, the operator had not identified brake failures as a hazard in their hazard register. CASA had approved the operations manual incorporating the SMS in 2015. However, they had not identified that the hazard register did not identify this aspect.

Go-around decision

The approach and touch down on the incident landing were reported to have been normal. The trainee pilot advised that, as they applied left rudder, but before applying the right brake, there was a snapping noise and the aircraft veered left. The training pilot advised that the aircraft veered left between 15–20°.

They immediately called out 'taking over' and assumed control of the aircraft, with the trainee pilot removing their hands and feet from the flight controls. The training pilot assessed that their rudder pedals had collapsed forward, so they had neither rudder nor brake authority. They decided that, as they were heading for the water, which was about 40-50 m away, and the aircraft was still moving at approximately 50–60 kt, the safest option was to apply full power and conduct a go-around.

The trainee pilot stated that if they had continued on the ground 'it would not have been a smooth impact'.

Federal Aviation Administration guidance

The Federal Aviation Administration's (FAA) publication *The art of aeronautical decision-making* advises that aviation decision making can be broken down into three parts - to perceive, process and perform.

The FAA publication *Airplane flying handbook Chapter 17 Emergency procedures* advises that a pilot takes about 4 seconds to perceive and react to an emergency situation. In addition, 'there are several factors that may interfere with a pilot's ability to act promptly and properly when faced with an emergency'. These are listed as:

- reluctance to accept the emergency situation
- desire to save the airplane
- undue concern about getting hurt.

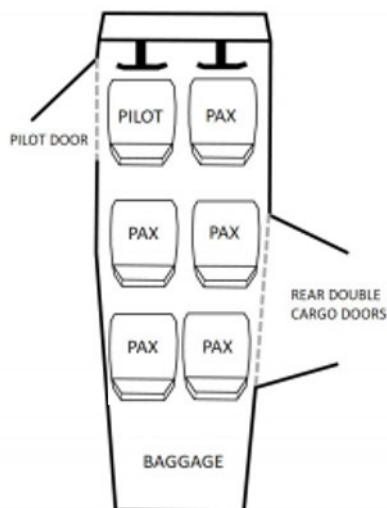
It goes on to advise:

A pilot who is faced with an emergency landing in terrain that makes extensive airplane damage inevitable should keep in mind that the avoidance of crash injuries is largely a matter of: (1) keeping the vital structure (cabin area) relatively intact by using dispensable structure (i.e., wings, landing gear, fuselage bottom) to absorb the violence of the stopping process before it affects the occupants (2) avoiding forceful bodily contact with interior structure.

Emergency egress in the U206

The U206⁷ has a door adjacent to the left pilot's seat and a double clamshell cargo/cabin door in the passenger compartment on the right, adjacent to the second and third seat rows (Figure 5).

Figure 5: Cessna U206 showing location of pilot door and double clamshell cargo/cabin door



Source: TSB investigation report A18W0129, adapted by ATSB to match occurrence aircraft

Operation of rear cargo doors

The forward door of the rear double cargo doors must be opened first to allow the aft door to open (Figure 7). The forward door handle is accessible for passengers in the middle row seats and is difficult to reach by passengers in the back-row seats. The forward door handle has three positions:

- when the lever is horizontal (with the lever facing forward), the door is locked
- turned clockwise 90° to the vertical position, the door is closed
- turned clockwise another 30°, the door is open.

When the flaps are extended, the front half of the clamshell cargo door is blocked by the flap and can only be opened approximately 8 cm (Figure 6).

⁷ The U206, TU206 and 206H models are designed with the rear double cargo door.

Figure 6: Cessna U206 with door unable to be opened more than 8 cm when flap is extended



Source: TSB investigation report A18W0129, annotated by ATSB

A red lever, mounted in the aft door leading edge, is used to unlatch the aft door (see Figure 7: Cessna 206 forward cargo door open showing red lever activated on the leading edge of rear door). However, this lever is in line with the backrest of the right middle row seat. As such, it is difficult to reach for the passenger occupying the middle seat and is again difficult to operate by passengers in the back-row seats.

In addition, when the red lever in the leading edge of the aft door, is lowered to the open position, it strikes the slightly open forward door, which prevents the aft door from opening. The lever must therefore be restowed before opening the aft door, being mindful that the aft door latch does not re-engage.

A service bulletin was subsequently released by Cessna to improve the red lever operation so that the lever automatically restowed (see Cessna service bulletin *SEB91-4 Cargo door latch improvement* in Australian requirements). Having to keep the forward door open to operate the lever in the forward edge of the aft door, adds to the difficulty of the procedure, especially when attempting to open the doors from the rear seats.

Figure 7: Cessna 206 forward cargo door open showing red lever activated on the leading edge of rear door



This image shows an aircraft where service bulletin SEB91-4 has not been incorporated and the red handle does not retract automatically. Before the door can be opened, the red lever is required to be restowed without the door relatching. This is not indicative of the accident aircraft.

Source: TSB investigation report A18W0129, annotated by ATSB

In addition, when the doors on the aircraft are locked from the inside, neither the front nor the rear cargo door can be opened from the outside.

Emergency Procedures

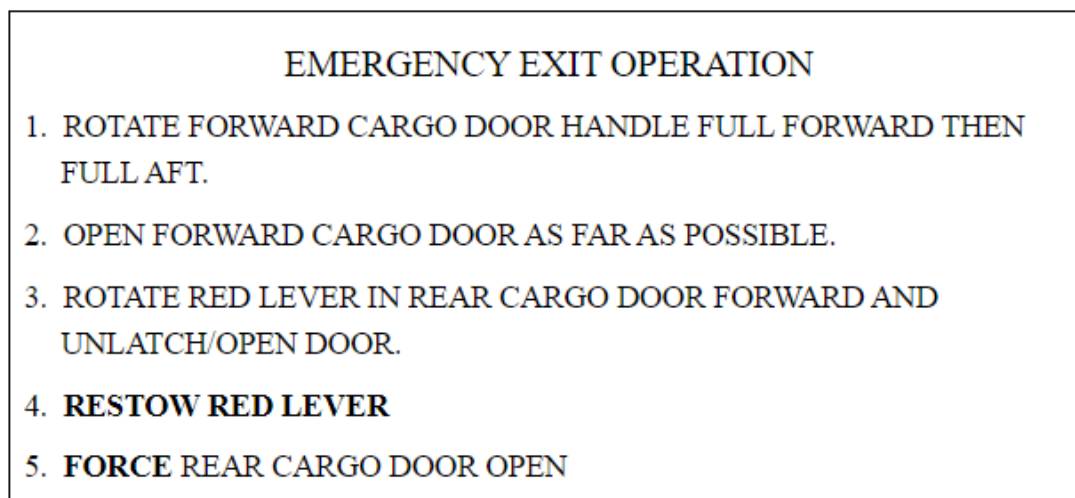
The pilot operating handbook (POH) emergency procedures section provided checklist and amplified recommended actions to be taken in the event of an abnormal situation. In the 'forced landings' section, the procedure for ditching stated that flaps were to be extended to 40°. In addition, it noted 'evacuate through the cabin doors. If necessary, open window and flood cabin to equalise pressure so doors can be opened'.

There was no reference in this section to warn that the cargo door will be blocked if the flaps are extended. The procedures for other forced landings, with or without engine power, also stated that the flaps were to be extended to 40°. Again, there was no reference in that section to warn that the cargo door will be blocked if the flaps are extended.

The amplified procedures section contained a brief description of the 'cargo door emergency exit', which included:

if the wing flaps are extended, open the doors in accordance with the instructions shown on the placard (Figure 8) which is mounted on the forward cargo door.

Figure 8: Cargo door emergency exit placard



*Step 4 is not required in aircraft where Cessna service bulletin SEB91-4 has been incorporated.
Source: Cessna 206 pilot operating handbook*

Federal Aviation Administration certification requirements

The Cessna 206 was first certified in 1963 under the United States (US) Federal Aviation Administration (FAA) Civil Aviation Regulation Part 3. Section 3.387 which stated:

Closed cabin airplanes carrying more than 5 persons shall be provided with emergency exits consisting of movable windows or panels or of additional doors which provide a clear and unobstructed opening....The exits shall be readily accessible, shall not require exceptional agility of a person using them....The method of opening shall be simple and obvious, and the exits shall be so arranged and marked as to be readily located and operated even in darkness.

There have been a number of revisions made to this standard over the years however, once an aircraft has been certified, the design standard under which it was certified continues to apply.

Australian requirements

In 1988, the Civil Aviation Authority (CAA),⁸ released an airworthiness directive AD/Cessna 206/47 that required improved placarding of Cessna 206 emergency exits. Cessna subsequently released service bulletin [SEB91-4 Cargo door latch improvement](#) in March 1991, which recommended modifying the handle in the rear door half to include a spring to ensure that the handle would return to the stowed position.

That same year, the CAA issued AD/Cessna 206/47 amendment 2, which allowed SEB91-4 to be an alternate means of compliance to the required placards. In 2011, CASA subsequently issued amendment 3 to [AD/Cessna 206/47](#) which clarified which 206 models the AD applied to, as SEB91-4 had been incorporated at manufacture in some models and other models did not have the cargo door, however, SEB91-4 remained as an alternate means of compliance. AEE complied with this AD.

Transport Safety Board of Canada

In 2018, the Transport Safety Board of Canada (TSB) investigated a collision with water involving a float-equipped U206 ([A18W0129](#)). In this occurrence, the aircraft inverted upon impact and became submerged. The pilot and one passenger escaped through the forward door window. Three other passengers survived the impact and were found with their seatbelts undone, however, they did not escape the aircraft and subsequently drowned.

⁸ In July 1995, the Civil Aviation Authority separated into the Civil Aviation Safety Authority and Airservices Australia.

The TSB report noted ‘the rear double cargo doors have been identified as a risk to passengers in emergency situations for many years’. Further, the report documented some of the work which had been conducted to address the risk associated with the design of the cargo door, including:

- In 1991, Cessna issued Service Bulletin SEB91-4 which provided a service kit to incorporate a spring assembly to automatically retract the handle on the leading edge of the rear half of the door to allow it to pass the front half of the door. It also included improved placarding to clarify the instructions on how to open the door in an emergency.
- In 1998, Cessna resumed manufacturing the 206 with the 206H. This was certified under the US Federal Aviation Regulations⁹ 23.807 legislation. Transport Canada determined that the 206H did not meet the requirements of the legislation, as the rear cargo door could not be considered an emergency exit as the means of opening was not ‘simple and obvious’. As a result of that assessment Transport Canada reduced the number of occupants permitted in the aircraft to five.
- Between 1999 and 2003, Transport Canada, the FAA and Cessna worked on a design change to address this issue, which could be applied to the 206H, and retrofitted to the previous 206 models. No acceptable solution was found, and the matter was discontinued.
- In 2005, Transport Canada proposed an airworthiness directive to address the issue of different models allowing different numbers of occupants, despite having the same design. However, following industry consultation, the proposal was withdrawn.

In response to the 2018 Canadian occurrence, TSB released an Aviation Safety Advisory [A18W0129-D1-A1](#) *Cessna 206 emergency exit – blocked double cargo door with flaps extended*, ‘to bring attention to the significant safety issue involving Cessna 206 series aircraft fitted with double cargo doors’.

Other action taken by regulatory bodies

November 1996

As a safety action in response to an accident in a Cessna U206 where a pilot and three passengers drowned when they could not escape the aircraft after it capsized during the take-off run ([A96Q0114](#)), Transport Canada (TC) wrote to the FAA to express concern about the adequacy of the emergency exit in the Cessna U206 aircraft. In the letter, TC strongly recommended that should production of the U206 resume:

...the FAA require Cessna to incorporate a solution which eliminates the interference problem between the flaps and the emergency exit...

No action was taken by FAA in response to this letter.

March 2020

FAA released an Airworthiness Concern Sheet [NOTC0041](#) asking for information from people who had experience using the 206 cargo door. They subsequently advised that 95 per cent of the respondents did not want action taken on the issue. They also advised that their research had shown that the biggest positive impact to safety was ensuring that pilots briefed their passengers on how to use the door. No further action was planned.

April 2020

Transport Canada released Airworthiness Directive [CF 2020-10](#) which limited the number of seats in Cessna 206 aircraft to five, in other than the 206H and T206H models,¹⁰ and aircraft which had not been modified to FAA supplemental type certificate (STC) SA1470GL (see Right side door below). Additionally, if passengers were seated in the rear row, they must have demonstrated the

⁹ The United States Civil Air Regulations were replaced with the Federal Aviation Regulations on 1 February 1965.

¹⁰ Transport Canada had previously reduced the number of passengers permitted in the 206H and T206H models to 5.

capability to operate the cargo door on the day of the flight. They must also have been briefed that the cargo doors were only to be used in an emergency if the front left cabin door was obstructed.

The same month, the Civil Aviation Authority of New Zealand released Continuing Airworthiness Notice [25-003](#) to alert operators of Cessna 206s in New Zealand to CF 2020-10.

August 2020

The European Union Aviation Safety Agency (EASA) released a Safety information bulletin [2020-16](#) to alert European operators of Cessna 206s to CF 2020-10.

Cessna 206 exit modifications

Several organisations have developed solutions to ensure the cargo door can be opened easily in the event of an emergency. Some of these solutions have received approvals from the FAA and are commercially available. Some of these include:

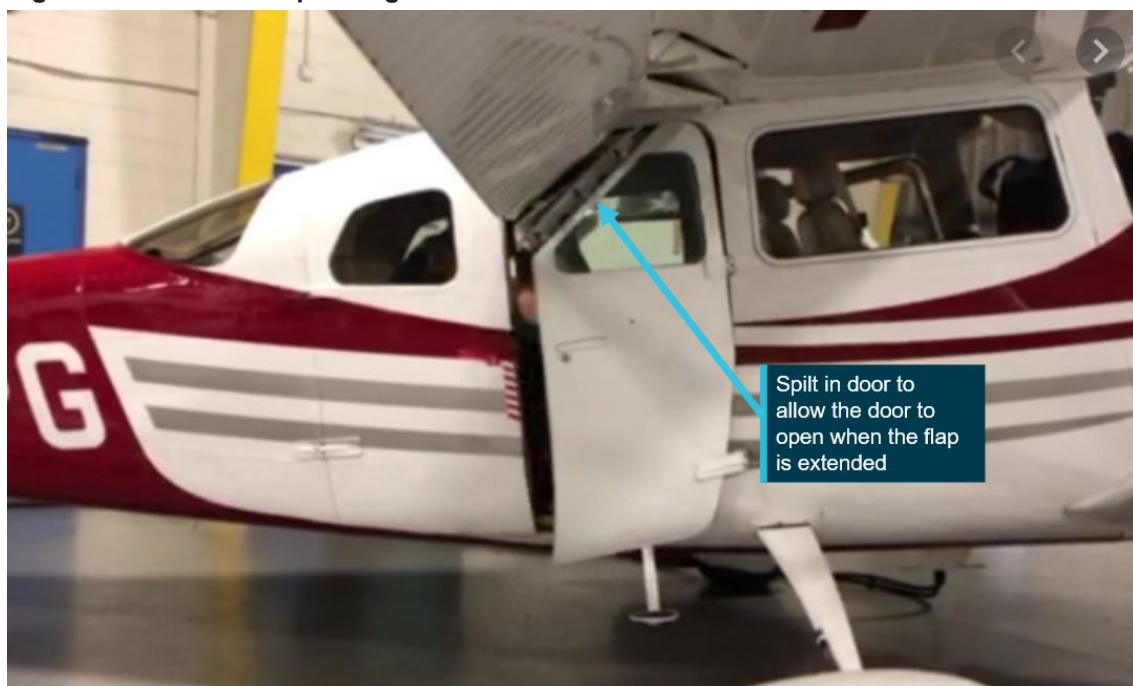
Right side door

FAA STC SA1470GL approves a right-side door in the front cabin, which allows both egress for the front right passenger and emergency egress from the centre row seats in the cabin.

Installation of the Split Forward Cargo Door Window

Transport Canada have approved supplemental type certificate [SA20-34](#). This allows for the forward cargo door to be split allowing the door to open when the flap is extended (Figure 9). This has also been approved in Europe under EASA STC 10074631 and the FAA under STC SA04550NY.

Figure 9: Cessna 206 split cargo/cabin door



Source: Coast Dog Aviation, annotated by ATSB

PDQ emergency egress system

At the time of writing this report, the manufacturer reported that the FAA were in the final stages of approval for supplemental type certificate [ST02309AK](#). Under this approval a handle is installed which, when activated, allows the front cargo door to be released (Figure 10). This allows access to the red lever and the aft cargo door can then be opened.

Figure 10: Cessna U206 with emergency egress system



Source: Airframe Innovations

Similar occurrences

The ATSB conducted a search of aviation investigation databases, and other sources, to identify accidents involving Cessna 206 aircraft, where the impact was likely survivable however, difficulties opening the cargo door resulted in significant delays during the emergency egress, or the cargo door had not been opened. The following accidents were identified:

Table 1: Similar occurrences

Year	Injuries	Summary	Link
2018	5 persons on board (pob) 3 fatalities	During a landing on water, a float equipped U206G nosed over. The pilot and one passenger survived. The three remaining passengers, who received no injuries during the accident, were unable to escape the fuselage and drowned. The passengers were found with their seatbelts unfastened but had not opened the cargo door, which was blocked by 20° flap.	TSB A180129
2012	5 pob 1 fatality	During a landing on water, the float equipped 206 nosed over. The flaps were extended blocking the cargo door. The pilot and three passengers escaped by bending the cargo door. The fourth passenger, found in her seat with the seatbelt on, likely died through injuries caused by the accident.	NTSB ANC12FA073
2010	5 pob 4 fatalities	During cruise, the engine failed, and the pilot conducted a ditching into Lake Michigan. The pilot did not lower the flap; however, the cargo door had not been opened. The pilot survived. Two passengers were found outside the aircraft however, their life	NTSB CEN10FA465

		jackets had failed. Of the two passengers found inside the cabin, one had removed their seatbelt.	
2003	2 pob 1 fatality	During the landing on water, the float equipped 206 flipped over. Contrary to instructions provided by the pilot, the passenger made their way to the rear of the aircraft, was unable to exit, and drowned.	TSB aviation occurrence A03Q0083
2001	5 pob 1 fatality	During the landing, the aircraft collided with a hole in the runway, nosed over and slid into a river. The pilot and three passengers escaped with minor injuries, however, one of the passengers drowned trying to escape the aircraft.	Aviation Safety Network Wikibase Occurrence 45813
1997	3 pob 2 fatalities	During the landing on water, the float-equipped aircraft flipped as the landing gear had not been retracted. Two passengers were unable to exit the aircraft and drowned. The door handle was found in the upright closed position.	TSB Aviation investigation report A97C0090
1996	6 pob 4 fatalities	During the take-off on water, the aircraft capsized. The pilot and three passengers drowned in the rear of the aircraft, when the pilot could not open the cargo door. Two passengers escaped through the pilot door. There was evidence that an adult had attempted to open the cargo door.	TSB Aviation investigation report A96Q0114
1989	5 pob 4 fatalities	During the landing on water, the float equipped 206 nosed over. The flaps had been extended to 20° and then raised to 10° during the accident sequence to prevent the flaps from blocking the cargo door. The pilot survived, however four passengers drowned when the cargo doors could not be opened. ¹¹	Aircraft Accident Investigation Board – Norway 06/99
1985	5 pob 3 fatalities	During the landing on a dam, the float-equipped 206 nosed over as the landing gear had not been retracted. The pilot and one passenger survived, but three passengers were fatally injured.	ATSB 198503550

In March 1999, at Pitt Island, New Zealand, a Cessna 206 had an engine failure and ditched in the sea. The pilot was aware of the issue with deployed flap blocking the rear doors and ditched the aircraft with the flaps retracted. Consequently, all the occupants escaped from the aircraft and swam to shore. (Transport Accident Investigation Commission New Zealand [99-001](#))

¹¹ In July 1998, the AAIB of Norway released a 'temporary' recommendation to the Civil Aviation Authority of Norway to consider the safety of passengers during sightseeing flights in the Cessna U206G due to the difficulties evacuating the aircraft.

Safety analysis

Introduction

On 29 January 2020, at about 1322, the flight crew of a Cessna U206G aircraft, registered VH-AEE, were conducting simulated brake failure training on a beach at Fraser Island, Queensland. During the landing roll, directional control was lost and the training pilot conducted a go-around. While the aircraft was flying parallel to the beach, with flight control issues, the engine stopped, and the aircraft collided with the water. Both pilots escaped the aircraft and swam to shore with minor injuries.

This analysis will examine the sequence of failure in the nose landing gear system, the decision to conduct a go-around and the engine stoppage. Further, it will analyse the brake failure training conducted by the operator and the interaction between the landing flaps and cargo door in the context of emergency egress.

Accident sequence

Both pilots reported having conducted several landings involving simulated brake failure, without incident. On this landing, just after touchdown, and as the left rudder was applied the trainee pilot heard a snapping noise, immediately followed by loss of directional control. Examination of the rudder control system after the occurrence established its continuity. As such, it is likely that a partial failure in the nose gear assembly compromised the interconnected rudder and steering controls. The training pilot reported the rudder was jammed in the full left position and use of the brakes was not possible as the right-seat pedals had collapsed.

Despite the nose landing gear being found on the beach between where the aircraft took off and where the collision occurred, it is likely the nose gear leg did not detach from the aircraft while the aircraft was on the ground as this would probably have resulted in the propeller striking the sand and stopping the engine.

Additionally, as the rudder probably jammed due to the partial failure of the nose gear assembly, if the nose gear detached during the take-off or initial climb, control of the rudder would likely have been restored. However, based on the account of the pilots, this did not happen.

Supplied images showed that the fuel strainer was missing, and the fuel line that fed the strainer was fractured. These components were in the nose gear bay and directly fed the engine fuel system. Loss of fuel supply at this location would have resulted in almost immediate engine stoppage. As the engine continued to provide power for approximately 1-1.5 minutes after take-off, it is highly probable that the nose gear separated and fractured the fuel line, as the aircraft collided with the water.

Examination of the nose gear fracture surfaces revealed they were consistent with the attachments failing in overstress, with no indication of a pre-existing fault. It could not be established which part of the nose landing gear failed first nor why the training pilot's rudder pedals were affected as described.

Engine failure and collision with water

The engine, and associated components, were not recovered for examination. However, as neither pilot reported issues with the engine before the accident, it is unlikely there was a coincidental mechanical issue with the engine.

The aircraft departed the Sunshine Coast Airport with full fuel and had been flying for approximately three hours, leaving less than half fuel remaining at the time of the accident. The fuel system could only be operated on one tank at a time. As the aircraft collided with water, the exact quantity of fuel in each tank at the time of the accident could not be confirmed, however if

the fuel management had maintained roughly equal quantities of fuel, each tank would have been about one third full.

Following the go-around, the training pilot applied full right aileron to prevent the aircraft from rolling. This resulted in the aircraft being flown in a significantly uncoordinated state (sideslip), with right wing low. The pilot operating handbook stated that, with a quarter tank or less, 'prolonged uncoordinated flight such as slips or skids can uncover the fuel tank outlets, causing fuel starvation and engine stoppage'. The aircraft was flown in an uncoordinated state for between 1-1.5 minutes before the engine failed. If the fuel usage had not been equalised then it is possible the right tank contained quarter or less fuel, resulting in fuel starvation to the engine. It is also possible that the magnitude of the required sideslip permitted unporting of the fuel tank outlet at greater than one quarter capacity.

It is also possible, although considered less likely, that the damage to the landing gear in turn damaged the fuel strainer/fuel line during the final stages of the flight, again leading to fuel starvation.

Go-around decision

According to the United States Federal Aviation Administration, the typical time taken to realise there is a problem and react to it, is about 4 seconds. In that time frame, the pilot must perceive the problem, process the alternatives, and perform the selected action.

On this occasion, the decision to commence a go-around was influenced by the aircraft's deviation towards water with little to no directional control or brake function. Taking into consideration that the flight crew were conducting training for emergency procedures (including multiple go-arounds), there may also have been a greater inclination to commence a go-around. While opting for a go-around on this occasion was understandable, it resulted in flight over water with significantly reduced aircraft controllability.

The FAA's guidance for emergency procedures advised that accepting there will be an accident may be the safest option and using the aircraft's dispensable structure to absorb the ground/water impact forces will most likely reduce injuries. In this case, there was about 40-50 m from when the pilots perceived they had no braking or directional control, to the water's edge. Allowing the aircraft to continue to slow and using the aircraft structure to absorb the impact would, in hindsight, most likely have been the safest option.

Operator's safety management system

The operator had determined that their aircraft were susceptible to brake failures because they were operated regularly on the beach. To mitigate this safety concern the operator ensured the brakes were inspected during the pre-flight inspections and conducted regular simulated brake failure training. However, the concern had not been formally documented in the operator's hazard register.

The CASA booklet: [SMS for aviation-a practical guide](#) stated that if an operator identified a specific risk to their operation, appropriate mitigators should be identified and assessed. A risk analysis should be conducted to ensure the risk, after mitigators are applied, has been reduced to a level that is 'as low as reasonably practicable'. Not documenting the brake failure hazard in the register was a missed opportunity to both:

- assess the magnitude of the risk, taking in to account that apparent low likelihood of brake failure actually occurring
- identify any hazards that simulated brake failure training introduced, including the potential for nose wheel damage.

ATSB assessment of the brake failure training, did not identify excess stresses on the Cessna U206 or 172 nose wheel. However, analysis of the stresses on the nose wheel in the Mahindra Airvan 8, also used by the operator, indicated if the nose wheel were fully deflected and the

aircraft encountered soft sand, the additional side loads on the nose wheel system may induce damage.

Emergency egress

When the aircraft collided with the water, the extended flap prevented the front cargo door from opening fully. On this occasion, it is likely that when the training pilot kicked the doors open, the edge of it deformed the partially-extended (20°) flap sufficiently to allow egress.

More generally, the Cessna U206 pilot's operating handbook (POH) stated that 40° of flap were to be selected during ditching (and forced landings), creating a greater cargo door obstruction than occurred during this accident. Having the flap extended allows the aircraft to land at a slower speed, which has been shown to improve the chances of surviving a ditching. However, the POH emergency procedures did not identify that such a flap selection also prevents the forward cargo door from fully opening.

That situation may leave pilots unaware of the significant consequences of flap deployment. By contrast, at least one accident report shows that where the pilot has understood this issue and has not extended the flap during a ditching, the passengers have been able to readily exit the aircraft.

The aircraft's certification criteria required that emergency doors be clear, unobstructed and capable of being opened with a simple and obvious method. This is particularly important in the event of ditching, due to the inherently disorientating nature of underwater egress. The Cessna U206 cargo door requires a number of sequential steps to open, and when the flaps are extended, this process is even more complicated. The inability to open the cargo door in this aircraft type has been shown in numerous accidents to have contributed to passengers being unable to exit the aircraft, resulting in fatalities.

Therefore, although the Cessna U206 with cargo door was certified, the method for opening the cargo door is not simple and in some flap configurations the forward door cannot be opened and therefore does not meet the emergency egress requirements.

Steps have been taken by regulators in an attempt to address the hazard presented by the rear double cargo door design, but to date, they have been ineffective at eliminating it. However, approved modifications are now available that remove the flap/door interference issue, despite this, to date no regulatory action has been taken to mandate the application of one of these modifications or remove the hazard by another means.

Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include ‘contributing factors’ and ‘other factors that increased risk’ (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition ‘other findings’ may be included to provide important information about topics other than safety factors.

Safety issues are highlighted in bold to emphasise their importance. A safety issue is a safety factor that (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or characteristic of an operating environment at a specific point in time.

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

From the evidence available, the following findings are made with respect to the collision with water involving a Cessna Aircraft Company U206G aircraft, VH-AEE, near Happy Valley, Fraser Island, Queensland, on the 29 January 2020.

Contributing factors

- Following touchdown, during a simulated brake failure exercise, a section of the nose landing gear attachment failed, resulting in the rudder becoming jammed in the full-left position.
- A go-around was initiated after directional control was lost on the ground. While there was only a short timeframe to make the decision to abort the landing, it resulted in flight over water with significantly reduced aircraft controllability.
- It is most likely that fuel starvation led to the engine losing power at a height too low for recovery and the aircraft collided with water.

Other factors that increased risk

- The 20° flap setting blocked the forward portion of the rear double cargo door, delaying the training pilot’s exit via the cargo door.
- **The Cessna 206 procedure for ditching and forced landing states that the flaps are to be extended to 40°. While that permits the aircraft to land at a slower speed, it also significantly restricts emergency egress via the cargo door. However, there is no warning about that aspect in the ditching or forced landing pilot’s operating handbook emergency procedures. (Safety issue)**
- **Cessna 206 aircraft, that feature a rear double cargo door, do not meet the aircraft certification basis for the design of cabin exits. Wing flap extensions beyond 10° will block the forward portion of the rear double cargo door, significantly hampering emergency egress. This has previously resulted in fatalities. (Safety issue)**

Safety issues and actions

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues. The ATSB expects relevant organisations will address all safety issues an investigation identifies.

Depending on the level of risk of a safety issue, the extent of corrective action taken by the relevant organisation(s), or the desirability of directing a broad safety message to the aviation industry, the ATSB may issue a formal safety recommendation or safety advisory notice as part of the final report.

All of the directly involved parties are invited to provide submissions to this draft report. As part of that process, each organisation is asked to communicate what safety actions, if any, they have carried out or are planning to carry out in relation to each safety issue relevant to their organisation.

The initial public version of these safety issues and actions will be provided separately on the ATSB website on release of the final investigation report, to facilitate monitoring by interested parties. Where relevant, the safety issues and actions will be updated on the ATSB website after the release of the final report as further information about safety action comes to hand.

Cessna 206 emergency procedures

Safety issue description

The Cessna 206 procedure for ditching and forced landing states that the flaps are to be extended to 40°. While that permits the aircraft to land at a slower speed, it also significantly restricts emergency egress via the cargo door. However, there is no warning about that aspect in the ditching or forced landing pilot's operating handbook emergency procedures.

Issue number:	AO-2020-010-SI-01
Issue owner:	Textron Aviation
Transport function:	Aviation: Air transport
Current issue status:	Safety action pending

Safety recommendation to Textron Aviation

The ATSB makes a formal safety recommendation, either during or at the end of an investigation, based on the level of risk associated with a safety issue and the extent of corrective action already undertaken. Rather than being prescriptive about the form of corrective action to be taken, the recommendation focuses on the safety issue of concern. It is a matter for the responsible organisation to assess the costs and benefits of any particular method of addressing a safety issue.

Recommendation number:	AO-2020-010-SR-017
Responsible organisation:	Textron Aviation
Recommendation status:	Released

The Australian Transport Safety Bureau recommends that Textron Aviation takes safety action to address the procedure for ditching and forced landing in the pilot operating handbook to ensure pilots are aware that extending the flaps beyond 10° will significantly restrict emergency egress via the cargo door.

Cabin exit design criteria

Safety issue description

Cessna 206 aircraft that feature a rear double cargo door do not meet the aircraft certification basis for the design of cabin exits. Wing flap extensions beyond 10° will block the forward portion of the rear double cargo door, significantly hampering emergency egress. This has previously resulted in fatalities.

Issue number:	AO-2020-010-SI-02
Issue owner:	United States Federal Aviation Administration
Transport function:	Aviation: Air transport
Current issue status:	Safety action pending

Safety recommendation to the United States Federal Aviation Administration

The ATSB makes a formal safety recommendation, either during or at the end of an investigation, based on the level of risk associated with a safety issue and the extent of corrective action already undertaken. Rather than being prescriptive about the form of corrective action to be taken, the recommendation focuses on the safety issue of concern. It is a matter for the responsible organisation to assess the costs and benefits of any particular method of addressing a safety issue.

Recommendation number:	AO-2020-010-SR-019
Responsible organisation:	United States Federal Aviation Administration
Recommendation status:	Released

The United States Federal Aviation Administration (FAA) advised that they had no comment on any aspect of the draft report and did not provide detail of any safety action related to the identified safety issue. Consequently, the ATSB recommends that the FAA takes safety action to address the certification basis for the design of the cabin doors in the Cessna 206, as wing flap extension beyond 10° will block the forward portion of the rear double door, significantly hampering emergency egress.

Safety issue description

Cessna 206 aircraft that feature a rear double cargo door do not meet the aircraft certification basis for the design of cabin exits. Wing flap extensions beyond 10° will block the forward portion of the rear double cargo door, significantly hampering emergency egress. This has previously resulted in fatalities.

Issue number:	AO-2020-010-SI-02
Issue owner:	Civil Aviation Safety Authority
Transport function:	Aviation: Air transport
Current issue status:	Safety action pending

Response by the Civil Aviation Safety Authority

On the 22 April 2021, the Civil Aviation Safety Authority provided the following response.

The ATSB have not provided evidence to support their claim that the design does not meet the certification basis. The Cessna 206 has a valid Type Certificate, issued by the FAA, with the aircraft meeting the required airworthiness requirements including those for exits and egress. CASA recommends that the statement that the aircraft does not meet the certification is not correct.

ATSB comment in response

The ATSB acknowledges that the Cessna 206 was certified by the FAA however, it is also noted that emergency doors for this aircraft type are required to be clear, unobstructed and capable of being opened with a simple and obvious method. The fact that extension of more than 10° of flap will block the cargo door, requiring a complicated sequence to permit egress, is not considered to meet the certification intent.

The ATSB also notes that independent action has been taken by other regulatory bodies to address the identified safety issue around emergency egress. There are several modifications available, that have received or are going through the process to receive supplementary type certificate approvals, which will significantly improve emergency egress for passengers in the rear of the aircraft. However, at the time of writing, none of these modifications were mandatory.

Safety recommendation to the Civil Aviation Safety Authority

The ATSB makes a formal safety recommendation, either during or at the end of an investigation, based on the level of risk associated with a safety issue and the extent of corrective action already undertaken. Rather than being prescriptive about the form of corrective action to be taken, the recommendation focuses on the safety issue of concern. It is a matter for the responsible organisation to assess the costs and benefits of any particular method of addressing a safety issue.

Recommendation number:	AO-2020-010-SR-018
Responsible organisation:	Civil Aviation Safety Authority
Recommendation status:	Released

The Australian Transport Safety Bureau recommends that the Civil Aviation Safety Authority takes safety action to address the certification basis for the design of the cabin doors in the Cessna 206, as wing extension beyond 10° will block the forward portion of the rear double door, significantly hampering emergency egress.

Additional safety action by Air Fraser Island

As a result of this accident, the operator has changed their procedures to specify that during emergency procedure training on the beach, no non-company vehicles are permitted to operate within the runway complex (the marked section of beach using bollards and witches hats identifying the area which has been identified as a suitable aircraft landing area.)

The operator has also reassessed the company hazard register and included brake failures.

General details

Occurrence details

Date and time:	29 January 2020 – 1322 EST	
Occurrence category:	Accident	
Primary occurrence type:	Collision with water	
Location:	Happy Valley (ALA), 135° M 6 km, Queensland	
	Latitude: 25° 22.6680' S	Longitude: 153° 13.9980' E

Aircraft details

Manufacturer and model:	Textron Aviation U206G (formerly Cessna Aircraft Company)	
Registration:	VH-AEE	
Operator:	Geltch Enterprises trading as Air Fraser island	
Serial number:	U20605226	
Type of operation:	Business - Check & Training	
Activity:	General aviation - Instructional Flying - Instructional flying - dual	
Departure:	Near Happy Valley, Queensland	
Destination:	Near Happy Valley, Queensland	
Persons on board:	Crew – 2	Passengers – 0
Injuries:	Crew – 2 (minor)	Passengers – N/A
Aircraft damage:	Destroyed	

Sources and submissions

Sources of information

The sources of information during the investigation included:

- the flight crew
- Air Fraser Island
- Civil Aviation Safety Authority
- United States Federal Aviation Administration
- Cessna Aircraft Company – Textron Aviation
- the insurance company
- video footage of the accident flight and other photographs
- Transport Canada
- Transport Safety Board of Canada.

References

Federal Aviation Administration, Airplane flying handbook FAA-H-8083-3B. US Department of Transportation, Federal Aviation Administration. Available on the FAA website www.faa.gov

Submissions

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the following directly involved parties:

- the flight crew
- Air Fraser Island
- Civil Aviation Safety Authority
- Federal Aviation Authority
- United States National Transportation Safety Bureau
- Transport Safety Board Canada
- Textron Aviation

Submissions were received from:

- Air Fraser Island
- Civil Aviation Safety Authority
- Transport Safety Board Canada
- Textron Aviation

The submissions from those parties were reviewed and, where considered appropriate, the text of the report was amended accordingly.

Australian Transport Safety Bureau

About the ATSB

The ATSB is an independent Commonwealth Government statutory agency. It is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers.

The ATSB's purpose is to improve the safety of, and public confidence in, aviation, rail and marine transport through:

- independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia, as well as participating in overseas investigations involving Australian-registered aircraft and ships. It prioritises investigations that have the potential to deliver the greatest public benefit through improvements to transport safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, international agreements.

Purpose of safety investigations

The objective of a safety investigation is to enhance transport safety. This is done through:

- identifying safety issues and facilitating safety action to address those issues
- providing information about occurrences and their associated safety factors to facilitate learning within the transport industry.

It is not a function of the ATSB to apportion blame or provide a means for determining liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner. The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

Terminology

An explanation of terminology used in ATSB investigation reports is available on the ATSB website. This includes terms such as occurrence, contributing factor, other factor that increased risk, and safety issue.