DUTCH
SAFETY BOARD

Investigations

Within the Aviation sector, the Dutch Safety Board is required by law to investigate occurrences involving aircraft on or above Dutch territory. In addition, the Board has a statutory duty to investigate occurrences involving Dutch aircraft over open sea. Its investigations are conducted in accordance with the Safety Board Kingdom Act and Regulation (EU) no. 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.
If a description of the events is enough to learn lessons, the Board does not conduct any further investigation.

The Board's activities are mainly aimed at preventing occurrences in future or limiting their consequences. If any structural safety shortcomings are revealed, the Board may formulate recommendations to remove these. The Board's investigations explicitly exclude any culpability or liability aspects.

Quarterly Report Aviation

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Investigations into aviation occurrences are carried out in accordance with internationally prescribed standards and recommended practices. The Dutch Safety Board is informed about all investigations into aviation occurrences worldwide in which the Netherlands is involved.

In any situation where an aircraft designed or built in the Netherlands is involved in an occurrence, the Dutch state has certain obligations. Relevant data regarding the aircraft and its crew must be supplied to the foreign investigating authority as quickly as possible.

Where it concerns an aircraft having a mass of more than 2,250 kg, a representative must be appointed if the investigating authority so requests. This representative takes part in the investigation on the Netherlands' behalf. The appointment of such representatives has been delegated to the Dutch Safety Board, which may call in the assistance of advisers from the aircraft manufacturer. In most such investigations, however, the Safety Board contributes from within the Netherlands.

In the past quarter, four foreign investigations were opened into occurrences involving civilian airliners made by Fokker, a Dutch manufacturer. These investigations, like all foreign investigations reported to the Dutch Safety Board, are included in this quarterly report. The report also includes an overview of occurrences that took place in the Netherlands and were investigated by the Safety Board, as well as recently published investigation results.

Tjibbe Joustra, *Chairman, Dutch Safety Board*


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Occurrences into which an investigation has been initiated

Emergency landing with damage following engine failure, Aquila A.211, G-GAED, Breda International Airport,
24 October 2016

Together with a passenger, the pilot of the Aquila A.211 was making a local flight from Breda International Airport, travelling in the direction of Hulst, prior to returning to the airport of departure. During the return flight, close to the airport, the aircraft started to lose engine power. The pilot decided to head directly for the airport. He attempted to recover engine power by briefly throttling down and switching magneto; however, this did not have the intended effect. The aircraft made an emergency landing with tailwind on runway 25 and bounced. This caused the aircraft's nose wheel support to break, and the propeller came into contact with the runway.

The Dutch Safety Board has launched an investigation into the cause of the engine failure.

Classification: *Incident*
Reference: *2016116*

G-GAED following the occurrence. (Photo: National Police)

Occurrences abroad with Dutch involvement that foreign authorities have initiated investigations into

Nose landing gear broken off during taxiing, Fokker F28 Mark 0100, EP-CFP, Teheran Mehrabad International Airport (Iran), 14 September 2016

While taxiing from the aircraft stand to the runway, a component of the nose landing gear on the Fokker 100 broke off. As a result, the nose of the aircraft came into contact with the taxiway, and suffered damage. There were no injuries.

> *The Aircraft Accident Investigation Bureau (AAIB) of Iran has launched an investigation following this occurrence. The Dutch Safety Board is offering assistance.*
>
> ***Classification:*** *Serious incident*
> ***Reference:*** *2016120*

The position of the nose landing gear. (Photo: AAIB Iran)

Collision during taxiing, Boeing 717-200, VH-NXN, Fokker F28 Mark 0100, VH-NFH, Paraburdoo Aerodrome (Australia), 5 October 2016

While taxiing to the runway, the Boeing 717 collided with the stationary Fokker 100. Both aircraft suffered slight damage.

> *The Australian Transport Safety Bureau (ATSB) has launched an investigation following this occurrence. The Dutch Safety Board is offering assistance.*
>
> ***Classification:*** *Incident*
> ***Reference:*** *2016109*

Loss of separation during flight, Boeing 787-9, PH-BHG, Airbus A320-232, VT-IFO, to the east of navigation point INTIL (India), 2 November 2016

The Airbus A320 had departed from the airport of New Delhi (India) and was climbing to a cruising altitude of FL350. The Airbus was flying in a southerly course. The Boeing 787 was flying in an easterly direction, also at an altitude of FL350. The flight paths of the two aircraft were convergent. As the two aircraft approached one another, the required minimum separation between them could no longer be maintained. Air traffic control instructed the Airbus to descend to FL340 and the Boeing to climb to FL360. The separation between the two aircraft was reduced to 3.6 NM horizontally and 200 feet vertically.

> *The Aircraft Accident Investigation Bureau of India has launched an investigation following this occurrence. The Dutch Safety Board is offering assistance.*
>
> ***Classification:*** *Serious incident*
> ***Reference:*** *2016126*

Occurrences abroad with Dutch involvement that foreign authorities have initiated investigations into

Crack in a compressor blade on the engine of OE-LVE. (Photograph: CIAT)

Engine vibrations, Fokker F28 Mark 0100, OE-LVE, Beograd FIR (Serbia), 6 November 2016

During cruise flight from Vienna (Austria) to Pristina (Kosovo), the aircraft started to vibrate. The automatic pilot switched itself off and there were indications in the cockpit suggesting problems with the left engine. Passengers in the cabin observed sparks and flames originating from the left engine. Shortly thereafter the left engine stopped, at which point the crew initiated the engine failure procedure. The crew diverted to Belgrade airport (Serbia) where a safe landing was made. Upon inspection of the engine, a crack was observed in a compressor blade.

The Serbian Center for Investigation of Accidents in Transport (CIAT) has launched an investigation following this occurrence. The Dutch Safety Board is offering assistance.

Classification: *Serious incident*
Reference: *2016121*

Loss of separation, Fokker F28 Mark 0100, P2-AND, Quest Kodiak K100, P2-SIR, Lae Nadzab Airport (Papua-New Guinea), 16 December 2016

Shortly following take-off of the Fokker 100, a loss of separation occurred with a Kodiak K100, which was in the airport traffic circuit. The Kodiak K100 was descending in preparation for landing.

The Accident Investigation Commission of Papua-New Guinea has launched an investigation following this occurrence. The Dutch Safety Board is offering assistance.

Classification: *Serious incident*
Reference: *2016135*

Crash during emergency landing on beach, Velocity 173 RG, PH-FUT, Tenerife (Spain), 27 December 2016

Twenty minutes following take-off from Tenerife Norte Airport (Spain), the pilot issued an emergency call to air traffic control. He subsequently made an emergency landing on the beach at Las Teresitas. The aircraft crashed during the emergency landing. The pilot and one other passenger suffered severe injuries. No injuries to the third passenger were reported. The aircraft was totally destroyed.

The Spanish Comisión de Inverstigación de Accidentes e Incidentes de Aviación Civil (CIAIAC) has launched an investigation following this occurrence. The Dutch Safety Board is offering assistance.

Classification: *Accident*
Reference: *2016136*

Archive photograph of PH-FUT. (Photo: Texel International Airport)

Published reports

The damaged engine following the landing. (Photo: CIAIAC)

Serious engine failure, Boeing McDonnell Douglas MD-11F, PH-MCU, Tenerife South/Reina Sofia Airport (Spain),
9 March 2014

The MD-11F is a three-engine aircraft with engine #1 and engine #3 located respectively below the left and right wing, and engine #2 in the tail. The aircraft in question, equipped with Pratt & Whitney PW4000 series engines, was carrying out a cargo flight from Tenerife-South airport (Spain) to Viracopos (Brazil). During the initial climb at an altitude of approximately 1550 feet, the cockpit crew heard a loud noise, and felt the aircraft yaw to the right. The crew noted that the engine readings for engine #3 were not normal. They completed the appropriate checklist, and issued an emergency call. The same engine then issued an engine fire warning. After activating the first fire extinguisher, the engine fire indicator was cleared. Because the aircraft weight was in excess of the maximum landing weight, and the aircraft was controllable, the crew decided to first jettison fuel before returning to the airport of departure. They landed without incident. Due to the fire hazard, the crew had asked the airport fire brigade to monitor the brakes and watch for any leaks around engine #3. There were no signs of overheated brakes or leaks.

Investigation revealed that various parts of the turbine section of the engine had broken free and been ejected through the housing of the engine. In other words, an uncontained engine failure. This not only caused damage to the leading edge and underside of the right wing and winglet, but also to parts of the control surfaces such as the right flaps, the right aileron and the horizontal stabiliser. Further investigation revealed that the uncontainment was initiated from the fourth stage of the engine turbine.

According to the report, the damage in the fourth stage was attributable to hairline cracks in the stator vanes as a result of excitation: pressure pulses in the second stage led to vibrations in the fourth stage of the turbine which is (particularly) susceptible if the vibration frequency approaches the natural resonance frequency. Stator vanes had broken free due to fatigue. Although the engine was in compliance with the latest installation requirements and was considered free from the effects of excitation on the basis of risk monitoring, the report of the CIAIAC revealed this not to be the case. In addition, the influence of corrosion on the occurrence of this incident could not be excluded.

The CIAIAC issued two recommendations to the engine manufacturer. The first recommendation suggests the immediate further quantification of the risk of excitation in the monitoring and evaluation studies of this engine type. Secondly, to prevent future engine failures, it is recommended that the fourth stage of the turbine be inspected for the effects of excitation. This inspection refers to engines considered 'safe' for the effects of excitation.

The investigation was undertaken by the Spanish Comisión de Inverstigación de Accidentes e Incidentes de Aviación Civil (CIAIAC). The Dutch Safety Board and the the affected airline participated in the investigation in accordance with the guidelines from the ICAO Annex 13. The CIAIAC published its final report on 22 November 2016.

> *The report can be downloaded via the site of the CIAIAC: http://www.fomento.es/NR/rdonlyres/5625E125-26B0-491F-8059-6325C1D98593/140089/2014_005_ENG.pdf*

Published reports

Collision with snowplough during take-off, Falcon 50EX, F-GLSA, Vnukovo International Airport (Russia),
20 October 2014

Shortly following rotation during take-off, the Falcon 50EX came into collision with a snowplough on runway 06 at Vnukovo Airport (Russia). Due to damage to the right wing as a result of the collision, the aircraft started to roll uncontrollably to the right. The crew were unable to halt this rolling motion, by turning the control column full left. The aircraft crashed 250 metres further on, where it collided with the ground, inverted. The four persons on board the aircraft were killed. The driver of the snowplough was unhurt.

Snowplough

The snowplough was located on the runway, without permission. The driver of the snowplough was tasked with carrying out work at the airport, in a group of three snowploughs. They were supervised by a shift supervisor who controlled the three snowploughs from a separate vehicle. Because one of the snowploughs broke down shortly after work was started, this vehicle temporarily left the group, together with the shift supervisor, to have the snowplough repaired. The remaining two snowploughs continued working.

When the shift supervisor returned, he had lost one of the two remaining snowploughs. The driver of the snowplough in question had become lost and without realising had twice driven inadvertently over the intersection of the two runways at the airport. He had done this without requesting permission from air traffic control. The second time he crossed the runway intersection, air traffic control had declared the Falcon 50EX for take-off. Air traffic control had not observed the movements of the snowplough. An alcohol test of the driver of the snowplough in question, taken after the event, revealed that at the time of the accident he was under the influence of alcohol.

Air traffic control

Air traffic control at Vnukovo operates an Advanced - Surface Movement Guidance and Control System (A-SMGCS). This system detects traffic at the airport, which is subsequently displayed for the air traffic controller on a Traffic Display (TRADIS). Both the Falcon 50EX and the snowplough were visible on the air traffic control TRADIS, at the time of the occurrence. The air traffic controllers on duty had not received sufficient training for the system which was capable of generating warnings on the TRADIS in the event of the risk of a conflict situation at the airport. The manual issued to the traffic controllers contained no information about how the system should be configured to generate warnings on the TRADIS. Amongst others, warnings for runway incursions were switched off at the time of the occurrence.

Warnings can also be generated whenever objects on the airport cross so-called reserve lines. These imaginary lines can be set by the air traffic controller. The traffic controllers on duty during the incident, however, had not received any training on setting these reserve lines. The investigation revealed that the reserve lines set when the system was introduced had not been changed. There was no reserve line set for the intersection of the two runways at the airport, where the collision occurred. At the moment of the occurrence, various warnings were open for other aircraft and the snowploughs that had crossed other reserve lines. The air traffic controller had given no indication of having received these warnings by a mouse click. This was not possible from his workstation.

F-GLSA following the accident. (Photo: IAC)

Crew

While taxiing towards the runway, the crew received take-off clearance, from traffic control. At that moment, due to its low speed, the snowplough was not yet visible on the TRADIS. The crew read back the take-off clearance, and started carrying out the during taxi checklist and then the line up checklist. 11 seconds after take-off clearance was given, the snowplough started moving towards the runway, at which point it became visible on the TRADIS. 37 seconds after receiving take-off clearance, the crew pushed the throttles forward for take-off. 5 seconds after the Falcon 50EX started take-off, the snowplough drove onto the runway. The captain of the Falcon 50EX observed the snowplough which appeared to be crossing the runway 9 seconds later. 2 seconds later, the snowplough stopped on the runway. At that same moment, the captain of the Falcon 50EX handed control to the first officer, in accordance with the standard procedure of the airline for which they were flying. Approximately 4 seconds later, the aircraft passed take-off decision speed and rotation speed. The first officer initiated rotation.

During rotation, the captain called out in shock that there was a vehicle in front of the aircraft. At that point, the distance between the two was approximately 145 metres. The steering column was immediately pulled back in order to increase climbing speed. However, to avoid stalling, the steering column was immediately pushed forward. The aircraft hit the snowplough 12 seconds after initial rotation.

> *The Interstate Aviation Committee (IAC) published its report on 24 October 2016. The Dutch Safety Board assisted in the investigation because the manufacturer of a subsystem of the 'airfield surveillance and control system' is based in the Netherlands. The report can be downloaded via the site of the IAC: http://mak-iac.org/upload/iblock/e12/Final_Report_eng_F-GLSA.pdf*

The situation just after the collision. (Photo: AAIU(Be))

Van hit during taxiing, Cessna 172M, PH-SKN, Brasschaat airfield (Belgium), 20 August 2015

The pilot had planned a cross country flight from Hilversum airfield to Brasschaat airfield. Because prior permission is required to land at Brasschaat airfield, the pilot phoned the airfield twice. However, he failed to make contact because the local aeroclub that manages the airfield was closed that day. Nonetheless, the pilot decided to complete his flight. This was the pilot's first visit to Brasschaat. When he arrived at Brasschaat, he saw that the airfield was open, because members of the local glider club were flying. The pilot landed on runway 16 and started taxiing on the taxiway with the intention of parking the Cessna close the clubhouse of the local aeroclub at the parking area for motorised aircraft. However, he inadvertently taxied past the parking area because he was not aware of its precise location. The parking area was also empty, making it difficult to recognise. The Cessna taxied past the zone used for motorised aircraft, into the zone reserved for gliders. During taxiing, the pilot's attention was focused on the glider activities on the right-hand side of the taxiway. The driver's attention was drawn by a winch located 25 metres from the edge of the taxiway. As a result, the pilot failed to spot the van parked immediately adjacent to the taxiway. The left wing tip of the Cessna hit the van, which caused the nose of the aircraft to swivel towards the bus. The propeller then hit the right flank of the van. The aircraft and van suffered damage. There were no injuries.

Because the pilot had made no telephone contact prior to the flight with anyone at the airfield, he was not prepared for the situation on arrival.

> *The Air Accident Investigation Unit (Belgium) published its report on 20 August 2016. The Dutch Safety Board assisted in the investigation. The report can be downloaded from the site of the AAIU(Be): http://mobilit.belgium.be/sites/default/files/downloads/accidents/final_report_2015-14-ebbt.pdf*

Published reports

Hard landing with damage following engine failure, Cessna 182R, PH-RPH, near Saint-Romain-la-Motte (France), 25 September 2015

The pilot had flown the aircraft from the airfield at Saint-Yan to the airfield Roanne Renaison (France). From there he intended to carry out three parachute flights. In the descent to the airfield, after completing the third drop, the engine failed at an altitude of approximately 1900 feet. The pilot attempted to restart the engine, but without success. He subsequently sent a radio call to the airfield that he intended to fly a long final approach to runway 20, with the intention of landing in the opposite direction of the runway in use. Shortly afterwards, the pilot realised he would no longer reach the runway with his remaining altitude, and decided to make an emergency landing in a field.

The pilot set his flaps at ten degrees for the approach and flew at a speed of 70 knots. Shortly before the landing, the speed had fallen to 55 knots. The pilot was forced to briefly gain altitude to avoid a row of trees, at which point the stall warning was activated. The aircraft then made a hard landing in a field, coming to a standstill after 150 metres. The aircraft suffered severe damage.

The distance from the landing point to the end of runway 20 was 880 metres.

After the landing, the fuel gauge showed empty. The right-hand tank was found to be completely empty and the left-hand tank contained just 3 litres of fuel. The pilot stated that prior to departure for the 15 minutes positioning flight, there had been 90 litres of fuel remaining in the tanks. Following arrival at the airfield of Roanne Renaison, a further 20 litres of fuel were added. The pilot assumed fuel consumption of 60 litres per hour, and estimated that each parachute flight would last around 30 minutes. He assumed that there was sufficient fuel in the tanks for three flights. The aircraft was not equipped with a low-fuel warning system.

The aircraft flight manual records fuel consumption of between 50 and 70 litres per hour, depending on aircraft weight. On the parachute flights, four parachutists were on board; as a result, the aircraft was heavy and consumed more fuel.

The accident was caused by a miscalculation of fuel consumption during the flight preparation. This caused the engine to stop during flight. No account was taken of fuel reserve or the volume of unusable fuel in the fuel tanks. Because the aircraft was forced to manoeuvre to avoid a row of trees shortly before the landing, the aircraft stalled and made a hard landing resulting in damage to the aircraft. The pilot suffered injuries.

The pilot was in possession of a commercial pilot licence (CPL) with qualification for SEP and MEP (single and multiple engine). He had a total of 415 hours flying experience of which 17 on this aircraft type. This was the first time the pilot had carried out a parachute drop with an aircraft of this type.

The French aviation authorities the Direction de la sécurité de l'Aviation civile declared two pilot licences issued to the pilot by the aviation company invalid, above all because of the poor training provided to the pilot. Training was supposed to be provided by an instructor but was instead given by the manager of the aviation company. The manager himself was not a pilot.

The French Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) published its report on 8 November 2016. The Dutch Safety Board assisted in the investigation. The report (in French) can be downloaded via the site of the BEA: https://www.bea.aero/uploads/tx_elydbrapports/BEA2015-0590_01.pdf

PH-RPH following the emergency landing. (Photo: BEA)

Runway excursion after leak in hydraulic system, Saab 340B, G-LGNJ, Rotterdam The Hague Airport, 30 September 2015

Shortly after take-off from Rotterdam The Hague Airport to Aberdeen International Airport, a Saab 340B - with fifteen passengers, two flight crew and one cabin crew on board - experienced a main hydraulic system failure. The aircraft returned to the airport of departure after having flown for some time in a nearby holding pattern for trouble shooting. A safe landing was executed and the aircraft came to a stop on the runway. However, during engine shutdown, the aircraft moved forward and to the left. The aircraft came to a full stop in the grass verge on the runway's left-hand shoulder. An emergency evacuation of the passengers followed. The passengers were uninjured.

The investigation showed that the central hydraulic system failure had occurred due to hydraulic fuel leakage from a broken downlock swivel on the main right-hand landing gear. The swivel was broken due to metal fatigue. The manufacturer had issued a Service Bulletin in 2013 for the replacement of these swivels. This Service Bulletin had not yet been implemented for the operator's entire fleet. The aircraft involved in the incident was not yet flying with the modified swivel.

As a result of the classification of the checklists for abnormal hydraulic malfunction, the flight crew missed the alternative procedures for engine shutdown during ground operations, in the event of low hydraulic fuel quantity and low hydraulic pressure. This resulted in forward engine thrust and uncontrolled movement of the aircraft when the engines were shut down. Both the manufacturer and the operator are taking measures to improve the checklists to prevent a recurrence.

The investigation further revealed that the flight crew did not immediately carry out the memory items to turn off the electric hydraulic pump associated with the hydraulic failure so that in the event of central hydraulic system failure, the backup hydraulic hand pump system has to be relied upon. It also emerged that the checklist for abnormal situations contained no information about the limitations of the hydraulic hand pump system.

The captain failed to follow the operator's procedures for passenger disembarkation in unusual situations. Had he done so, the outcome would have been a normal disembarkation, since there was no immediate threat to the safety of the passengers.

> *The Dutch Safety Board published its report on 19 December 2016. The report can be downloaded from the site of the Dutch Safety Board: https://onderzoeksraad.nl/uploads/phase-docs/1444/2313ff59192bb-rapport-runway-excursion-als-gevolg-van-lekkage-in-het-hydraulische-systeem-nl.pdf*

G-LGNJ alongside the runway. (Photo: Rotterdam The Hague Airport)

Published reports

Aircraft crashes into the North Sea, Cirrus SR20, G-ZOGT, North Sea (4.5 NM west of Schoorl), 4 January 2016

The single-engine propeller aircraft, of the make and type Cirrus SR20, registration G-ZOGT, took off for a VFR flight from Gloucestershire airport in the United Kingdom. The German pilot had recently purchased the aircraft and was planning to fly it to Osnabrück-Atterheide airport in Germany. The route selected by the pilot took him in an easterly direction, much of it over the North Sea, and the aircraft was due to make landfall at Den Helder. The weather forecast for the part of the flight in Dutch airspace was such that a VFR flight was more or less impossible. Around 6 NM before reaching the Dutch coast, the pilot reported to the Dutch flight information service (FIS) that he was encountering visibility problems caused by sea fog. The FIS assigned him an easterly course to the Dutch coast. The aircraft initially followed this course, but after some time it made a turn to the right, after which it followed a southerly course. The final radar images showed a northerly course, after which the aircraft disappeared from the radar around 4.5 NM to the west of the Dutch coast, at the same latitude as Schoorl. After contact was lost, the Dutch FIS alerted the emergency services.

Following a search, parts of the aircraft were found, both floating and on the bed of the North Sea. The body of the pilot was found and recovered on 6 January 2016. A small proportion of the wreckage of the aircraft was recovered in the subsequent weeks.

The accident was probably caused by the aircraft stalling after the pilot had become disoriented as a result of the lack of visual references due to the poor visibility.

> *The Dutch Safety Board published its report on 23 December 2016. The report can be downloaded from the site of the Dutch Safety Board: https://www.onderzoeksraad.nl/uploads/phase-docs/1448/2b77c6223671b-rapport-vliegtuig-verongelukt-in-de-noordzee-nl.pdf*

Archive photograph G-ZOGT. (Photo: AAIB)

Runway excursion, Cirrus SR22, PH-ANV, Aéroport de Béziers Cap d'Agde en Languedoc (France), 2 February 2016

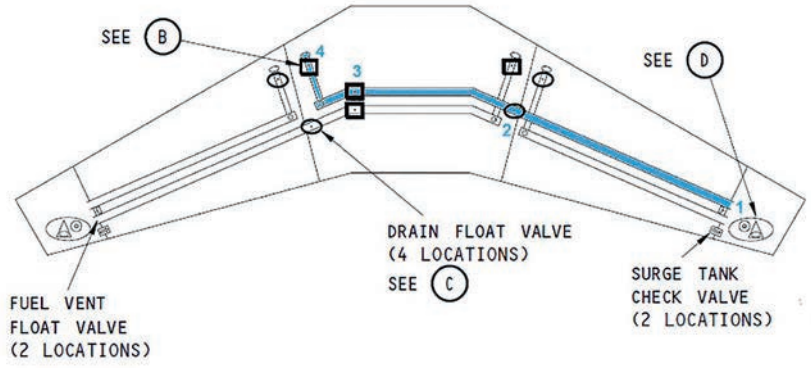
Together with a passenger, the pilot was flying from Ibiza (Spain) to Béziers (France) according to instrument flight rules. While braking following a Global Navigation Satellite System approach to runway 27, the left-hand brake locked. This made it impossible for the pilot to continue to steer the aircraft in line with the runway. The aircraft left the runway, passed a taxiway located perpendicular to the landing direction, and collided with a sign. The collision caused damage to the right wing, the fuselage and the landing gear.

The pilot was in possession of a commercial pilot licence (CPL) with qualification for SEP, MEP, TMG and for IFR flight. He had 790 flying hours experience, of which 500 hours on this type of aircraft.

> *The French Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) published its report on 8 May 2016. The Dutch Safety Board assisted with the investigation. The report (in French) can be downloaded from the site of the BEA: https://www.bea.aero/uploads/tx_elydbrapports/BEA2016-0074.pdf*

PH-ANV following the occurrence. (Photo: captain)

Occurrences that were not investigated extensively



The position of the vent lines and drain float valves. (Source: airline)

Engine failure following maintenance, Boeing 737-800, and route,
18 February 2015

The incident flight

The Boeing 737-800 was en route from Woensdrecht airbase to Amsterdam Airport Schiphol, following maintenance. There were two pilots on board. During the initial climb, the pilots discovered a fuel imbalance between the left-hand and right-hand fuel tank. There was less fuel in the left-hand tank than in the right-hand tank. The crew switched off the fuel pumps in the left-hand tank and opened the cross-feed valve to rebalance the fuel level in the left-hand and right-hand tanks. After the fuel imbalance had been corrected, the crew switched the fuel pumps in the left-hand tank back on, and closed the cross-feed valve. The Boeing 737-800 is fitted with three fuel tanks; one in the left wing, one in the right wing and a central tank. Because the cockpit indication at that time suggested there was still a small volume of fuel in the central tank, the crew decided to also activate the fuel pump on this tank. Almost immediately afterwards, the crew initiated the descent to Amsterdam Airport Schiphol. As a consequence, the throttle handles were closed. The engine power from the right-hand engine fell to 30% while engine power from the left-hand motor continued to fall, until the engine cut out. The crew made an emergency call, and completed the checklist for engine failure. The aircraft was subsequently safely landed on runway 18C at Amsterdam Airport Schiphol.

Fuel analysis

The left-hand engine failed because it was supplied with a mixture of 15% water and 85% kerosene. This emerged from an analysis of the content of the central tank which was carried out by the airline in question after the flight.

Pre-flight maintenance

The aircraft in question had been grounded for maintenance for one month due to problems with unintended transfers of fuel from the right-hand tank to the central tank. A possible cause of this fuel transfer was a leak in the vent line on the right wing. This vent line continues into the central tank. To test this hypothesis, a leak test was carried out at Brussels airport. To carry out this test, water was pumped through the vent line, to reveal the presence of the leak.

It turned out there was a 7-centimetre tear in the vent line, through which fuel could flow unintentionally from the right wing tank to the central tank.

Following the leak test in Brussels, the fuel tanks were emptied to remove any remaining water. The aircraft was then refuelled, and flown by transfer to Woensdrecht airbase for a repair to the tear in the vent line. During this flight, fuel from the central tank was used. At Woensdrecht airbase, the repair was carried out by a contracted maintenance company.

Following the repair to the vent line, waste from the repair was rinsed out of the vent line using water. No official job description from the aircraft manufacturer was available for carrying out this action. As a result, the airline suggested the unofficial procedure to the maintenance company, that had been carried out in Brussels, in identifying the leak. Water was injected into the vent line, and was drained off via a drain float valve behind the site of the repair. The purpose of the drain float valve is to allow fuel from the vent line to run into the fuel tank, whenever the fuel in the vent line is at a lower level than in the drain float valve.

Analysis of the maintenance work

An analysis of the fuel vent system revealed that the water used for cleaning the vent line was also able to continue past the drain float valve, where the water was drained off, and as a result found its way into the central tank.

Because an unofficial maintenance procedure was used, no job descriptions were available for the maintenance mechanics. Furthermore, no check was made with the aircraft manufacturer whether a cleaning procedure of this kind was permitted. The proposed cleaning procedure was passed on directly to the maintenance mechanic carrying out the repair, by the project manager at the maintenance company, bypassing the project planner. The task of the project planner is to verify whether proposed maintenance activities are permitted.

Because the maintenance activities undertaken were not adequately documented in the aircraft documentation (either in Brussels or in Woensdrecht), it is not possible to determine with any certainty whether the water in the central tank originated from work in Brussels or in Woensdrecht.

Occurrences that were not investigated extensively

Weekly check

In addition to the fact that the fuel tank should have been emptied following the repair, the maintenance company that carried out the repair work also operates a standard weekly check, according to which the fuel tank should have been emptied. This procedure is separate from the repair work undertaken. This weekly check was planned for the day on which the aircraft departed for its flight to Amsterdam Airport Schiphol. This procedure is normally undertaken by two people, whereby one mechanic carries out the work, and the second mechanic carries out the check. In this case, it emerged, this seven-day check was carried out by only one mechanic. This mechanic had ticked off the seven-day check, but it emerged that he had failed to empty the fuel tank, because he knew that the tanks had been emptied prior to starting the repair and because he himself had captured the water from the drain float valve, during the cleaning procedure. This fact removed one barrier to preventing the incident, and it was possible that a quantity of water was left in the aircraft's central tank, unnoticed.

The affected airline and the maintenance company have each individually carried out an investigation into the possible cause of the engine failure. The Dutch Safety Board has received these investigation reports. The airline and the maintenance company have taken measures to prevent recurrence of similar incidents in the future. The Dutch Safety Board considers no further investigation into this occurrence necessary. With this notification in its quarterly report, the Dutch Safety Board hereby closes the investigation.

Classification: *Serious incident*
Reference: *2015011*

Near miss due to loss of control, Piper PA-46-350P Malibu Mirage, N9190X and Raytheon 390 Premier 1A, D-ISAR, near Maastricht Aachen Airport, 4 July 2016

The Piper Malibu Mirage with registration N9190X took off from Maastricht Aachen Airport for an IFR flight to Salzburg (Austria). On board N9190X were two pilots and two passengers. Prior to take-off, both pilots agreed on their roles, whereby one pilot would fly the aircraft and the other would be responsible for radio communication and flight navigation. Following take-off, N9190X followed the LNO2B departure procedure, and received clearance from traffic control Beek approach to climb to FL110. The air traffic controller issued the instruction that this climb should be carried out with a "*good rate of climb until passing FL60*". Because this instruction was not clearly read back by the aircrew, the traffic controller repeated the instruction several times. The instruction to climb rapidly was issued in connection with another aircraft that had departed from Maastricht Aachen Airport after N9190X. The aircraft, a Raytheon 390 Premier 1A with registration D-ISAR, followed the same LNO2B departure procedure.

N9190X was subsequently instructed to make a right turn onto course 160 degrees, in order to follow a more direct route. This instruction was read back by the flight crew of N9190X. The turn was initiated, but the aircraft turned too far. In response, the traffic controller subsequently issued the instruction to make a left turn to course 180 degrees. This instruction was not confirmed by the aircrew of N9190X. According to the data on the radar screen of the traffic controller, the N9190X was at that moment flying at an altitude of 4000 feet. D-ISAR subsequently called in to Beek Approach, and was identified by the traffic controller.

When the traffic controller's attention returned to N9190X, it became clear that his aircraft was now flying at 2000 feet, the same altitude as that for which D-ISAR had been issued clearance. The traffic controller issued a call to N9190X, immediately followed by an instruction to D-ISAR to make a right turn, to avoid a collision. This turn was immediately carried out. The pilot of D-ISAR also received a traffic alert from the Traffic alert and Collision Avoidance System (TCAS) on board his aircraft. The pilot of D-ISAR subsequently stated that he had seen the other aircraft, and that it was extremely close, and flying at approximately the same altitude as his aircraft. 2 minutes and 15 seconds after the final contact with N9190X, this aircraft called the air traffic controller, and the crew announced its intention of returning to Maastricht Aachen Airport.

The minimum separation according to the directives in this area is set at 3 NM horizontally and 1000 feet vertically. During the occurrence, the separation fell to 0.9 NM horizontally and 200 feet vertically. Following the occurrence, N9190X returned to Maastricht Aachen Airport and landed safely.

The crew of N9190X later declared that the aircraft was flown under manual control throughout the flight. During the climb, the climbing speed was approximately 500 feet per minute. The second pilot who had more experience on this aircraft type suggested switching on the automatic pilot, to reduce the workload and to achieve a better rate of climb. The pilot in control of the aircraft however preferred not to make use of the automatic pilot. Following the call from air traffic control to maintain a good rate of climb, until passing FL60, the second pilot asked the pilot who was in control of the aircraft to climb more rapidly. At that moment, the aircraft was flying subject to instrument meteorological conditions. However, the pilot increased the rate of climb too rapidly as a result of which the air speed of the aircraft dropped off quickly and the aircraft started to vibrate violently. As a result the headset of the second pilot, who was responsible for radio communication fell, behind his seat. The aircraft stalled, and lost 1400 feet of altitude in just a few seconds. The ground speed measured by the radar fell at this point to 32 knots. The second pilot intervened by pushing the control column forwards. The aircraft had recovered from its stall when it emerged below the cloud cover. Control of the aircraft was returned to the first pilot, and after retrieving

his headset, the second pilot sought contact with air traffic control. The first pilot told the second pilot that he had suffered spatial disorientation.

Following recovery from the stall, the crew of N9190X received course instructions from air traffic control to return to Maastricht Aachen Airport. It emerged that there was a deviation of 50 degrees between the direction of flight the pilot read off from his instruments, and the direction specified by air traffic control. Air traffic control rapidly recognised this situation and compensated for the situation in the clearance issued. This deviation may have been caused by the 'gimbal lock' effect, whereby the correct functioning of the gyroscopic instruments with multiple axes of operation is hindered as a result of extreme positions adopted by the aircraft.

The first pilot of N9190X was in possession of an American private pilot licence (FAA-PPL) with IFR qualification. He had a total of 262 hours flying experience, of which 1.7 hours on the aircraft type in question. The second pilot was in possession of the same pilot licence, with IFR qualification. He had a total of 1450 hours flying experience, of which 950 hours on the aircraft type in question. The first pilot had been checked out by an instructor on the Piper Malibu Mirage, the day before the occurrence; the second pilot was on board at the time as passenger. During this check flight lasting 1.7 hours, 0.6 hours was spent on flying under instrument flying rules. The check flight was also the only flight the pilot had undertaken in the three months prior to the occurrence.

Classification: *Serious incident*
Reference: *2016068*

Hard landing following aborted winch launch, Schempp-Hirth Janus B, PH-1252, Midden Zeeland airfield, 5 August 2016

The glider, with on board the pilot and one passenger, was planned to make a local flight following take-off from Midden Zeeland airfield, according to the winch launch method. After tautening the winch cable, the winch operator selected full power and as the glider accelerated, that airbrakes in the wings opened.

The glider rose free from the ground. The person operating the winch, the winch operator, noticed that the airbrakes had opened, and that the pilot was making large aileron adjustments, in order to keep the wings horizontal. The increased resistance caused by the open airbrakes meant a reduced rate of climb for the glider. Because the winch operator had already selected maximum power, he considered it unwise to continue winching the glider to a higher altitude in the current condition because of the risk of stalling. At a height of just a few metres, the winch operator therefore fully throttled back the winch control. A contributing factor in the winch operator's decision was the possibility that the pilot of the glider may have little experience with the winch launch method. It subsequently emerged that this was not the case. At the moment that the winch operator reduced power, the glider was at an altitude of between three and five metres, in a gentle climb attitude. The pilot released the winch cable and initiated the descent of the glider. Because the airbrakes were open, the glider subsequently lost height rapidly. Because the winch operator was under the impression that the winch cable was still connected to the glider, the operator attempted to increase the flying speed of the glider, by briefly delivering more power. Because the winch cable had already been released, this had no effect on the glider, which made a hard landing, causing damage to the nose wheel housing, and the attached brace. Neither passenger suffered any injury.

The pilot of the glider stated that prior to take-off, he had carried out an accelerated cockpit check, without the necessary thoroughness. Part of the cockpit check is to check the operation of the airbrakes, and to lock them in closed position, prior to take-off. This is achieved by pushing the airbrake handle into the fully forward position, overcoming a degree of resistance, so that the airbrakes are locked. The pilot indicated that he had pushed the airbrake handle forwards, but had incorrectly concluded that the airbrakes were in the locked position.

The pilot stated that he had felt rushed because he had been informed at a late stage that it was his turn to make a flight. The glider was already prepared for take-off by that time. The person whose job it was to attach the winch cable to the glider and the person holding the wing tip were also already in place, and ready to assist the glider take off. Due to the perceived pressure on the pilot to prepare rapidly for take-off, the checks necessary to ensure a safe flight were not carried out with due care.

The pilot was in possession of a Glider Pilot License (GPL) with qualifications for winching and towing. He had total glider flying experience of 190 hours (696 take-offs), of which 40 hours (140 take-offs) in the type in question. The winch operator had a lot of experience (42 years) of operating the winch.

Classification: *Accident*
Reference: *2016082*

Airbrakes in locked position.

Airbrakes in unlocked position. (Photographs: captain PH-1252)

Occurrences that were not investigated extensively

Off-field landing with injury and damage, Schleicher ASK 23B, PH-755, close to Winterswijk, 31 August 2016

The pilot, the solo occupant, stated that he had taken off for a cross country flight from glider field Terlet towards Stadtlothn in Germany. There was a gentle south-westerly wind, which picked up during the course of the day. There was cumulus cloud with 1/8 cover at an altitude of 1500 metres and visibility was good. The pilot stated that he attempted to gain altitude close to Winterswijk, but that he was forced to make an off-field landing when his attempts failed. For his landing attempt he selected a meadow with a south-easterly orientation. This meadow is situated behind his parental home. He flew a standard circuit, travelling at a speed of 80 km/hour on the downward leg and the base leg. Local wind conditions were wind from a direction of 250 degrees, with a speed of 7 knots.

On final, during which the glider experienced a downwind component, the pilot observed that he was still flying too high. In response he attempted to lose height by flying a slip manoeuvre, with the airbrakes fully opened. The first contact between the glider and the ground was approximately halfway along the length of the field. Following initial contact, the glider bounced, and returned to the ground approximately 15 metres before the end of the field. The glider eventually came to a standstill in a barbed wire fence, with the left wing against a fence poste, approximately 10 metres from a barn. The pilot suffered serious back injuries. He himself called the emergency services by dialling 112 (the emergency number). The glider suffered serious damage.

The pilot believed that the accident had occurred due to an error of judgement he had made in respect of the altitude, and that on final, he had completed his slip manoeuvre with the glider in an excessive nose-down position, as a result of which air speed had risen too high. He also expressed the opinion that the altimeter had indicated a value too high (approximately 70 metres) which subconsciously played a role in estimating his altitude. At the start of the flight, the pilot had set his altimeter at ground level (QFE1). The Dutch Safety Board emphasises the importance of setting the QNH2 when making a cross country flight.

The length of the meadow in which the aircraft landed is approximately 240 metres. Viewed in the landing direction, there is a row of low trees in front of the meadow edge. There are also a number of trees in the middle of the field. The width of the field where the aircraft landed is approximately 40 metres. This is the distance between the left-hand boundary of the field and the first trees standing in the middle of the field, seen from the direction of landing.

Close to the field, there are other fields that are longer, and with 'free access' (free from trees), making them more suitable for an off-field landing.

The duty instructor stated that at the start of the year, the pilot had told him that he wished to make a cross country flight to the Municipality of Winterswijk and that he intended to make a landing there, in a meadow close to his parental home. He explained that the field was surrounded by trees and low bushes and was not particularly large. The pilot was convinced that a landing in the field in question would not be a problem because he knew the field well. The duty instructor stated that he had told the pilot that he did not consider it a good idea to make an off-field landing at this location because making a planned off-field landing is prohibited, and because the field did not appear ideal, even if the pilot knew the field well. According to the pilot, the duty instructor discussed these subjects with him the day after the accident, and therefore not at the start of the year.

The pilot was in possession of a Glider Pilot Licence (GPL) with qualifications for winching and towing, and had total flying experience of 317 hours (1002 take-offs) of which 48 hours (137 take-offs) in the glider type in question.

The pilot had chosen the landing field well in advance, and the local area was known well to him. A glider pilot of this experience may be expected to have made a sound choice for an off-field landing field. It turns out that in this case, a less suitable field was selected. It is possible that the pilot in question was insufficiently critical in assessing whether the landing field in question was suitable for a landing by choosing a meadow behind his parents' home. After the event, the pilot stated that he had not planned the off-field landing in advance. The pilot has since recovered fully.

Classification: *Accident*
Reference: *2016093*

PH-755 following the accident. (Photo: Owner PH-755)

1 Atmospheric pressure at the earth's surface.
2 The QFE derived to average sea level in the ICAO standard atmosphere.

Incorrect altitude information due to malfunctioning transponder, Reims F172M, PH-IRO, near Pampus, 4 September 2016

PH-IRO took off from Lelystad Airport at around 13.15 hours for sight seeing. On board were the pilot and two passengers. After PH-IRO had taken off, the pilot first flew a circuit above Flevoland, then via the IJsselmeer to Volendam and from there via Amsterdam-Noord flew towards Muiden. The pilot was in contact with Amsterdam Information via the aircraft radio. Close to Muiden, Amsterdam Information called PH-IRO because according to the radar, the aircraft was flying at an altitude of 1800 feet. In this area the maximum permitted altitude for uncontrolled air traffic is 1500 feet AMSL.

According to the pilot of PH-IRO, the altimeter was indicating that he was flying at an altitude of 1200 feet, and the maximum height at which he had flown was 1350 feet.

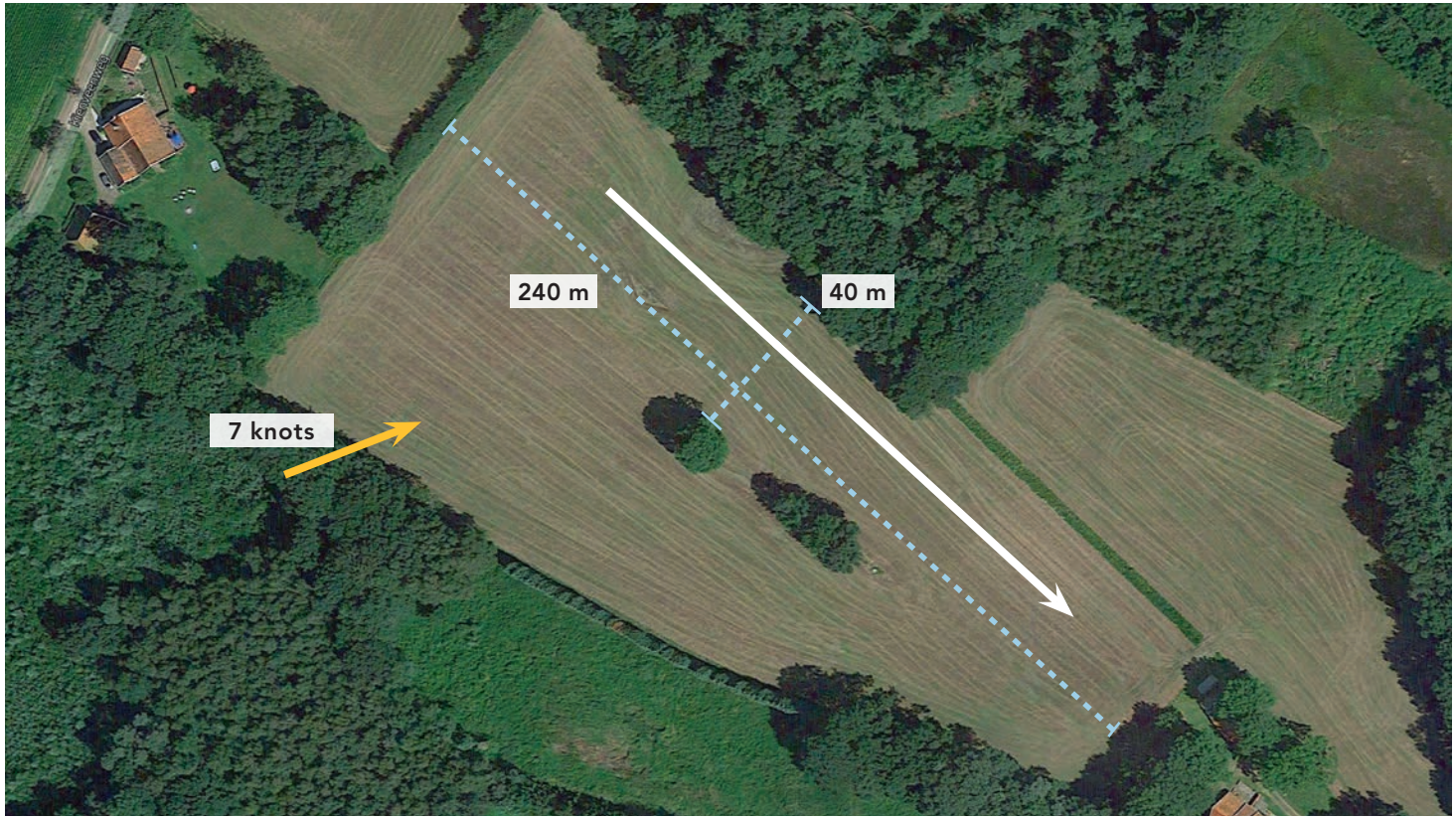
Close to Muiden is the 'PAM' (Pampus) beacon which is used by commercial aircraft and others, for Schiphol approach. According to radar information from air traffic control, the separation between

PH-IRO and a commercial aircraft that had started its Schiphol approach was less than the prescribed separation. The smallest separation was 1.5 NM horizontally and 200 feet vertically. The minimum specified separation between aircraft in this area is 3 NM horizontal or 1000 feet vertical. For the sake of caution, a second commercial aircraft was issued a course change by the air traffic controller, to avoid any potential conflict.

The pilot of PH-IRO subsequently stated that he was aware that on board PH-IRO there was sometimes a discrepancy between the flying altitude on the altimeter and the altitude displayed via the transponder on the air traffic control radar screen.

Following inspection by the maintenance company, a technical defect was identified in the transponder, as a result of which the flying altitude that appeared on the air traffic control radar screen was incorrect. This defect was not permanent; the altitude indication was sometimes correct and on other occasions incorrect. Following replacement of a part in the transponder, this defect was corrected.

Classification: *Incident*
Reference: *2016096*



The landing field selected by the pilot of PH-755. (Photo: Google Earth)

Emergency landing with damage following engine failure, BX-2 Cherry, PH-YCM, Breda International Airport, 10 September 2016

The amateur-built aircraft, with two people on board, took off from runway 25. It climbed to an altitude of 700 feet, and completed a right-hand turn. Here the pilot reported to Seppe Radio that it was leaving the circuit area. Subsequently, the pilot initiated a climbing turn to the left. During this turn, the engine started to run intermittently and engine power was lost. The pilot pulled back the throttle, and in glide flight, went in search of a landing location. He decided to return to the airfield, issuing an emergency call to Seppe Radio, and reported that he intended to land on runway 07, with a tailwind. Due to the low altitude at which the aircraft was currently flying, runway 25 could no longer be reached. The pilot flared the aircraft at high speed, but partly due to a tailwind component of 10 knots, the aircraft only landed a long way down the runway.

Occurrences that were not investigated extensively

The captain stated that he had in fact aimed at a point further up the runway, so as to be able to fly over the interchange before the beginning of runway 07, with sufficient margin. There was not sufficient space left to bring the aircraft to a standstill, on the runway. PH-YCM passed the end of the runway, and crashed through the airfield outer fence. With a sharp turn on the ground, the aircraft came to a standstill in a potato field, beyond the end of the runway. The passengers were uninjured. The aircraft suffered severe damage.

This was the aircraft's second flight on that day. During the first flight, no problems were observed with the engine. The incident flight was meant to ensure the correct functioning of the engine. Prior to the flight, the engine was tested on the ground. No problems were identified.

After the aircraft was recovered, a test start was made with the engine. The engine started easily, and ran at idle without problems.

The owner of the aircraft carried out an investigation into the engine failure. The cause of the engine failure was suspected as being the occurrence of a vapour lock. In the first flight of the day, prior to the accident flight, three landings were made, after which the aircraft was parked. The outdoor temperature on that day was 30 degrees Celsius. The temperature of the fuel in similar situations rises rapidly, which increases the risk of a vapour lock. The owner saw a relationship between the occurrence of a vapour lock and the location of the fuel pump and fuel filter. According to the party that supplied the engine to the owner, the fuel filter should be fitted between the fuel pump and the fuel tank. This ensures a low pressure in the fuel pipe between the fuel tank and the fuel pump, which in combination with high temperatures can lead to the occurrence of a vapour lock. This negatively affects the functioning of the fuel pump, and could result in an engine failure. According to the owner, placing the fuel filter after the fuel pump could remedy the situation. Fitting the fuel pump in the fuel tank reduces the risk of a vapour lock. Other owners of aircraft of this type have already selected this configuration. Because the aircraft type in question comes under the category amateur-built, there is no obligation to adapt the fuel system. The owner announced he would carry out further investigation before making any changes to the aircraft, and before the aircraft is flown again.

On 27 September 2013, this same aircraft made an emergency landing following loss of engine power. This happened while practising off-field landings, whereby during the third practice landing, the engine delivered no further power during the restart. It was determined at that time that the propeller became disconnected from the engine if no power was selected with a lean air fuel mixture. After this incident, the owner decided to select a rich fuel air mixture, whenever low power is selected, to avoid recurrence of the engine failure.

The pilot was in possession of a private pilot licence, and had 2000 hours flying experience, of which 480 hours on the aircraft type in question.

Assuming a normal landing speed for the BX-2 Cherry of 60 knots, if landing with a tailwind component of 10 knots, the length of the landing roll (the moment from which the wheels touch the ground, to stationary) must be approximately 80% longer than when landing with a 10 knot headwind.[3] In addition, the flaring manoeuvre requires more distance because of the higher ground speed. The Board believes that this should be taken into consideration in deciding whether to return to the airfield for a landing with tail wind, in the event of an engine failure shortly following take-off. In the investigation report 'Engine failure after restart' (concerning an

PH-YCM following the incident. (Photograph: captain)

3 Civil Aviation Authority of New Zealand (2011), *Takeoff and Landing Performance.*

accident involving a Piper Cub near Midden-Zeeland airport) which was published by the Dutch Safety Board on 20 November 2015, other risks of returning to the airfield of departure in a similar situation are discussed.

Classification: *Accident*
Reference: *2016099*

Belly landing with damage, Piper PA-34-200T, PH-HKM, Lelystad Airport, 9 October 2016

The twin-engined aircraft was carrying out a flight under visual flight rules, from Lelystad Airport to Borkum airport in Germany. On board were the captain and five passengers.

As the captain approached the destination from the northwest, he called Borkum Info. He was informed that runway 13 was in use. At that time it was raining but visibility was good. During final approach, three green lights lit up in the cockpit, indicating that the landing gear was extended and locked. During the landing, the captain heard a loud bang, accompanied by an unfamiliar rumbling sound. When he took his feet from the pedals, the aircraft's nose rose slightly. At that moment, the captain suspected problems with the nose wheel due to the lower than normal nose attitude. He decided to make a restart, before starting a troubleshooting procedure. The cockpit light for the nose wheel no longer showed green. Via mirrors on both engine nacelles, the captain observed that the nose wheel was angled slightly backwards, in an unusual attitude. He raised and lowered the landing gear several times, but without any change to the position of the nose wheel. The captain informed Borkum of the problem, and of his intention to divert to Groningen Airport Eelde because of the facilities available at that airport, He also reported that there he would carry out a low pass, so that the nose wheel could be observed from the ground, after which he would perhaps attempt a landing.

On arrival at Groningen Airport Eelde, the captain made a low pass during which the nose wheel could be observed from the control tower. Air traffic control confirmed that the nose wheel was angled backwards at an angle of approximately 20 degrees.

PH-HKM following the landing. (Photo: National Police)

Occurrences that were not investigated extensively

Eventually, the captain decided to return to Lelystad Airport, with the landing gear down, and at reduced flying speed. This meant the landing there could be carried out with less fuel in the tank. Furthermore, he was more conversant with the situation at Lelystad Airport, and he would have more time to consult the aircraft flight manual. Thanks to the additional flying time, the captain would also be able to prepare better for the landing, reassure the passengers and prepare them for the landing.
The captain followed the normal approach procedure for runway 05, which was in use at Lelystad Airport and maintained contact with Lelystad Radio. The wind was blowing from a direction of 310 degrees at a speed of 4 knots. Carrying out the alternative procedure for manually lowering the landing gear was unsuccessful. The captain once again made a low pass. It was confirmed from the tower that the nose wheel was still angled backwards.

The captain planned a flapless landing. With a gear-up emergency landing, the aircraft flight manual specifies flaps up to reduce damage to the wings and flaps. He also planned to place the mixture control handles on both engines in the idle cut off position, before the propellers touched the ground. When the aircraft flew over the runway threshold, the captain drew the throttle handles towards him, at which point the aircraft lost height rapidly. He then needed both hands to flare the aircraft (because of the high pulling forces on the control column) as a result of which he could make no further change to the position of the mixture control handles. After the landing, the captain was able to allow the aircraft to roll on its main landing gear for some time, before the nose tipped forward, and the aircraft came to a standstill, nose down. The passengers were unharmed. The aircraft suffered damage to the nose wheel, the nose wheel doors and the propeller tips on both engines.

Technical investigation revealed that the nose wheel locking system malfunctioned due to a fractured bolt. This bolt has to be replaced after every 500 flying hours, according to an Airworthiness Directive. According to the maintenance history of the aircraft, this bolt had been fitted for 193 flying hours, at the moment of the accident.

At Borkum airport, a broken light was discovered before the start of the runway. It is possible that the aircraft hit this light, with its nose wheel.

The captain was in possession of a private pilot licence with qualifications for SEP, MEP, instrument flight (SEP/MEP) and night flight. He was also in possession of a valid class 2 medical certificate. The captain had a total flying experience of 1015 hours, of which 35 hours on the aircraft type in question.

Classification: *Serious incident*
Reference: *2016110*

Emergency landing with damage following engine failure, Aero Sp. AT-3 R100, PH-GED, Texel International Airport, 28 October 2016

The Aero AT-3 was making a cross country flight from Lelystad Airport to Texel International Airport subject to visual meteorological conditions. On board were the captain and a second pilot. During the flight, they flew through rain showers on several occasions. High atmospheric humidity and the ambient temperature can cause ice to be formed in the carburettor. During the flight, the captain switched the carburettor heating on on several occasions, to prevent this. Close to Texel, the captain called in for weather information from Texel Radio.

PH-GED after the accident. (Photo: Texel International Airport)

Texel Radio reported more than 10 kilometres visibility and a cloud base of 1300 feet. Given the current wind conditions, runway 31 was in use.

When the aircraft was on final approach, the engine briefly started to produce a rattling noise, before failing. This occurred at an altitude of some 500 feet. The captain made one attempt to restart the engine, without success. The captain then decided to make an emergency landing in a flower field in front of the runway. The aircraft suffered damage to the propeller and the nose landing gear. Both passengers were unhurt.

Following the emergency landing, the aircraft was found with extended choke and activated carburettor heating. Both these actions result in a richer fuel air mix. During testing, it emerged that in this configuration, the engine fails when low power is selected, such as during final approach. The captain stated that she had instructed the second pilot to pull out the choke when starting the engine at Lelystad Airport, because of the power required to start the engine. The second pilot stated that he had pushed the choke back in, but without applying much force. The captain stated that she had not checked whether the choke had been fully pushed back in after the engine was started.

The captain was in possession of a private pilot licence (PPL) and had 3835 hours flying experience. Of these, 173 hours in the aircraft type in question, of which 9.2 hours in the last three months.

Classification: *Accident*
Reference: *2016118*

The Dutch Safety Board in four questions

1

What does the Dutch Safety Board do?

When accidents or disasters happen, the Dutch Safety Board investigates how it was possible for them to occur, with the aim of learning lessons for the future and, ultimately, improving safety in the Netherlands. The Safety Board is independent and is free to decide which incidents to investigate. In particular, it focuses on situations in which people's personal safety is dependent on third parties, such as the government or companies. In certain cases the Board is under an obligation to carry out an investigation. Its investigations do not address issues of blame or liability.

Recently the Dutch Safety Board reported about lifting accident in Alphen aan den Rijn, about an investigation into a diving accident and medical care in the North Sea and a collision between a passenger train and a platform in Dalfsen.

2

What is the Dutch Safety Board?

The Safety Board is an 'independent administrative body' and is authorised by law to investigate incidents in all areas imaginable. In practice the Safety Board currently works in the following areas: aviation, shipping, railways, roads, defence, human and animal health, industry, pipes, cables and networks, construction and services, water and crisis management & emergency services.

3

Who works at the Dutch Safety Board?

The Safety Board consists of three permanent board members. The chairman is Tjibbe Joustra. The board members are the face of the Safety Board with respect to society. They have extensive knowledge of safety issues. They also have wide-ranging managerial and social experience in various roles. The Safety Board's office has around 70 staff, of whom around two-thirds are investigators.

4

How do I contact the Dutch Safety Board?

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DUTCH
SAFETY BOARD

Credits

This is a publication of the Dutch Safety Board. This report is published in the Dutch and English languages. If there is a difference in interpretation between the Dutch and English versions, the Dutch text will prevail.

February 2017

Photos
Photos in this edition, not provided with a source, are owned by the Dutch Safety Board.

Sources photos frontpage:
photo 1: Rotterdam The Hague Airport
photo 2: AAIB
photo 3: Aviation Police