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

January-March 2016

In the first quarter of 2016, the Dutch Safety Board started a thematic investigation into the safety of air traffic at and around Amsterdam Airport Schiphol. Over the past few years, the Dutch Safety Board has investigated several occurrences at the airport. The Board now wishes to investigate whether these incidents have more structural causes, such as the design, location and operation of the airport. Through this investigation, the Board aims to contribute to the further improvement of aviation safety. This is not only important for the current handling of air traffic, but also given the generally expected growth in the number of flights at Schiphol airport in the decades ahead.

Furthermore, the year 2012 showed a notable increase in the reported number of serious incidents and accidents in Dutch general aviation. In early 2016, the Board produced an overview of how this number has developed since. The findings are described in this report.

Tjibbe Joustra,
Chairman, Dutch Safety Board


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Observed trends

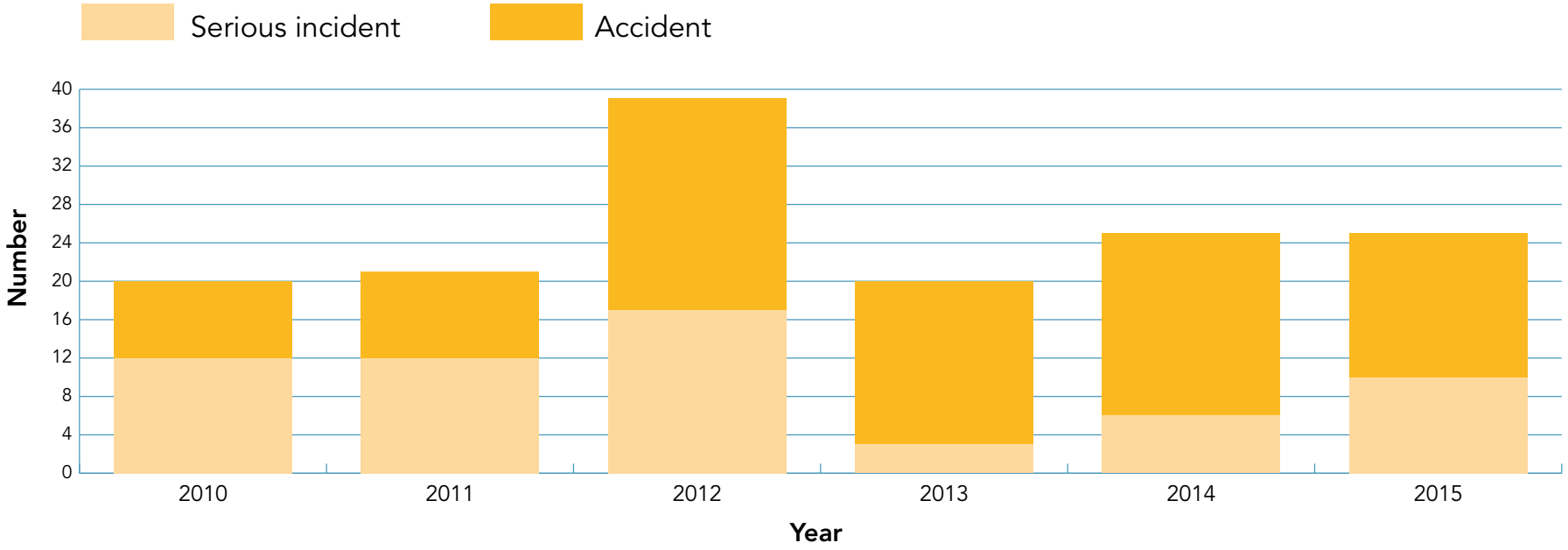
Reported general aviation occurrences in the Netherlands

Compared to the two previous years, the year 2012 saw a clear increase in the number of serious incidents and accidents reported to the Dutch Safety Board involving general aviation aircraft in the Netherlands. At the time, this increase prompted the Dutch Safety Board to start a thematic study, focusing on the state of safety in general aviation. The analysis did not provide any clear explanation for the peak observed in 2012. European figures seemed to confirm that this peak may have been a coincidence.

In early 2016, the Dutch Safety Board produced an overview of how this number has developed in recent years. The graph below shows the numbers of serious incidents and accidents reported to the Dutch Safety Board in the years 2010 through 2015.

It has to be noted that the fact that the numbers are small may lead to a somewhat distorted picture of the differences between the years. Nevertheless, since 2012, there appears to have been a slight decline in the number of general aviation accidents. However, this number is still higher than the average number of reported accidents per year in the period before 2012. The number of reported serious incidents also shows a decrease, compared to both 2012 and the years prior to 2012, albeit that these have gradually started rising again in the past three years.

The total number of accidents and serious incidents reported in 2015 was equal to the figure for 2014. A noticeable fact is that in 2015 six out of ten of the serious incidents involved near misses. Further, it is striking that thirteen out of the fifteen accidents that year took place during landing and that, of these, seven were hard landings.



Occurrences into which an investigation has been initiated

Longer runway required during take-off, Boeing 737-800, Lisbon (Portugal), 3 December 2015

During the take-off run of a Boeing 737-800 registered in the Netherlands and containing 181 occupants, the runway length required turned out to be longer than was expected based on the calculations made by the pilots before the flight. The flight was continued to Amsterdam Airport Schiphol without further peculiarities being reported.

The Portuguese Air Accidents Investigation Branch (GPIAA) has asked the Dutch Safety Board to take charge of the investigation into this incident. The Board has decided to honour this request.

Classification: *serious incident*
Reference: *2015107*

Crash during flight, Cirrus SR20, G-ZOGT, North Sea (near Camperduin), 4 January 2016

A Cirrus SR20, the pilot being its only occupant, took off from Gloucestershire (UK) for a flight to Osnabrück-Atterheide (Germany). During its flight, at a point off the Dutch coast the aircraft disappeared from air traffic control's radar. During the search that was conducted subsequently, the pilot was found. He did not survive the accident. Various pieces of flotsam and wreckage washed up on shore have been recovered. In addition, in cooperation with the Directorate-General for Public Works and Water Management a number of pieces of wreckage were recovered from the seabed, including the aeroplane's engine and emergency parachute.

Classification: *accident*
Reference: *2016006*

Archive picture of G-ZOGT. (Photo: AAIB)

Occurrences into which an investigation has been initiated

Runway lights hit during take-off, Embraer 120, EC-JBD, Amsterdam Airport Schiphol, 18 January 2016

The twin-engine Embraer 120 cargo aircraft departed from Amsterdam Airport Schiphol's runway 24 for a flight to London Stansted Airport in the United Kingdom. After landing in the United Kingdom, damage to the aeroplane's fuselage and one of its propellers was detected. An inspection of the runway on site did not yield anything noteworthy. At the airport of departure (Amsterdam Airport Schiphol), several lamps of the lighting on the right-hand side of runway 24 turned out to be broken. It is clear that the aircraft hit these lamps during take-off.

Classification: *serious incident*
Reference: *2016004*

Damage to EC-JBD after landing. (Photo: AAIB)

Loss of control during go-around, Cirrus SR22T, N860PC, Amsterdam Airport Schiphol, 2 February 2016

The Cirrus SR22T landed on runway 27 at Amsterdam Airport Schiphol. After landing, the aircraft bounced several times, after which the pilot initiated a go-around. During the go-around, the pilot lost control of the aircraft at low altitude, after which the aircraft came to a stop in the grass to the south of the runway. The pilot, who was the only occupant, did not sustain any injuries. The aeroplane was heavily damaged.

Classification: *accident*
Reference: *2016007*

Runway incursion, tug combination including Boeing 787-9, PH-BHD, Amsterdam Airport Schiphol, 28 February 2016

A tug combination consisting of an aircraft tractor tugging an aeroplane crossed runway 36R at Amsterdam Airport Schiphol while this was in use. The tractor driver had been given permission to do so by apron control.

At the same time, an aeroplane received clearance to land on this runway from air traffic control. The situation was noticed in time by air traffic control, which then instructed the aeroplane to abort its approach and perform a go-around.

Classification: *serious incident*
Reference: *2016012*

The crashed N860PC. (Photo: Royal Netherlands Marechaussee)

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

The damaged PH-ANV. (Photo: captain)

Runway excursion, Cirrus SR22, PH-ANV, Béziers Vias Airport (France), 2 February 2016

After a flight from Ibiza (Spain) to Béziers (France) the pilot of the Cirrus, registered in the Netherlands, commenced to brake after landing, after which the aircraft moved to the left. The pilot failed to correct this deviation to the left, resulting in the aeroplane leaving the runway, hitting a sign in the process. Neither of the two occupants sustained any injuries. The aeroplane sustained damage to its fuselage and one of its wings.

France's Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation civile (BEA) has initiated a limited investigation in response to this accident. The Dutch Safety Board is assisting it in this investigation.

Classification: *accident*
Reference: *2016009*

Unmanned aerial vehicle (UAV), Aerialtronics Zenith ATX8, Hungary, 18 February 2016

An unmanned aerial vehicle (UAV) crashed during a professional flight in Hungary.

In response to this accident, Hungary's Transportation Safety Bureau (KBSZ) has initiated an investigation. As the type of UAV involved is a Dutch product, the Dutch Safety Board will be providing assistance in this investigation.

At the request of the KBSZ, Dutch Safety Board investigators attended the technical investigation of the UAV held at its manufacturer's facility in the Netherlands.

Classification: *accident*
Reference: *2016016*

Runway incursion, Embraer 190, PH-EXB, Dornier 328, HB-AEO, Bâle-Mulhouse Airport (France), 17 March 2016

The Dornier 328 was lined up on runway 15 and its crew were preparing for take-off. At the same time, an Embraer 190 registered in the Netherlands was taxiing to runway 33 via an intersection in order to take off in the opposite direction. Air traffic control instructed the Embrear to wait before lining up onto the runway. The Embrear then proceeded to line up on the runway. The Dornier, which had commenced take-off, passed over the Embraer at low altitude.

France's Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation civile (BEA) has initiated an investigation in response to this occurrence. The Dutch Safety Board is assisting it in this investigation.

Classification: *serious incident*
Reference: *2016015*

Crashed, York Laser Z-200, PH-LSR, Abbeyshrule Aerodrome, Co. Longford (Ireland), 20 March 2016

The aircraft, which was registered in the Netherlands and whose pilot was its only occupant, crashed in the vicinity of Abbeyshrule Aerodrome. The pilot, an Irish national who had purchased the aircraft recently, was killed as a result.

Ireland's Air Accident Investigation Unit (AAIU) has initiated an investigation in response to this occurrence. The Dutch Safety Board is assisting it in this investigation.

Classification: *accident*
Reference: *2016023*

Published reports

Crash following engine failure, AeroVodochody L-39C, near Valkenswaard, 15 September 2012

Being one of seven aircraft of the Breitling Jet Team, the L-39C Albatros jet experienced engine problems during the flight. These problems became so serious that the flight could not be continued. The pilot then shut down the engine and steered the aircraft towards an open area. Here, he and the second occupant left the aircraft with the ejection seats. The aircraft ended up in a field. Both occupants were unharmed.

After extensive investigation it was found that the engine problems were primarily caused by a defective low pressure turbine front bearing. Further it turned out that the assessment of the engine oil quality by a laboratory was done without any written references. Finally it was concluded that the L-39C does not have to comply with European safety level requirements.

> *The Dutch Safety Board published the report on 25 March 2016.*
>
> *http://www.onderzoeksraad.nl/en/onderzoek/1921/crash-following-engine-failure-aero-l-39c-albatros-15-september-2012*

ES-YLS after the accident. (Photo: National police)

Incidents that were not investigated extensively

Take-off with insufficient engine thrust, Boeing 777-300ER, PH-BVG, Amsterdam Airport Schiphol, 7 July 2013

Introduction

On 7 July 2013 at 17:27, a Boeing 777-300ER took off from runway 36C at Schiphol Airport. The engine thrust selected for the take-off was lower than was required for the weight of the aircraft. In addition, the reference speeds used for the take-off - such as the maximum speed at which the take-off can still be safely aborted (V_1), the speed at which the aircraft begins to rotate before the flight (V_r), and the safe initial climb rate (V_2) - were lower than is procedurally required for safe flight operations. Shortly after the take-off, the cockpit crew noticed the anomalous speeds and corrected them, after which the flight continued as normal.

The take-off of an aircraft with insufficient engine thrust - whether in combination with insufficient reference speeds or otherwise - is referred to as a take-off performance incident. These incidents bring along an increased risk as they could result in the aircraft leaving the runway at a speed close to the stalling speed, tail contact with the runway or contact with or reduced clearance to other obstacles. Various safety studies show that take-off performance incidents regularly occur with all types of aircraft operated by a variety of airlines around the world.

The incident on 7 July 2013 was almost identical to a similar incident that occurred with the same airline and with the same type of aircraft in 2009. The fact that an incident repeated itself under comparable conditions was particular cause for the Dutch Safety Board to initiate an investigation.

Flight preparations

During the flight preparations, the cockpit crew programs data - such as the flight path - into the flight computers. During the incident flight, the crew consisted of three pilots: a captain, a first officer and a second officer. It is not uncommon within the airline involved for the second officer to conduct the preflight duties while the captain follows the preparations from the third seat in the cockpit. Approximately 15 minutes prior to departure, the captain switched seats with the second officer. Once the loading schedule was passed on to the crew 5 minutes after the scheduled departure time, the final calculations could be made. These calculations include the required take-off thrust and the corresponding reference speeds based on the total aircraft weight provided.

During the investigation, it was found that the airline's published operating procedure did not specify independent input of the aircraft weights by multiple crew members. An independent judgement of the input and calculation process is the most important safeguard for the detection of input errors, and therefore for the prevention of incorrect calculations. In this case an input error had occurred.

What the procedure does enable is a comparison of the calculation results between the captain's Electronic Flight Bag (EFB) and the first officer's EFB. However, to arrive at a matching outcome, the input variables must be identical. Both in this incident and the incident in 2009, a pilot mentioned an incorrect take-off weight and the other pilot used that weight, which resulted in the calculations no longer being independent, causing the failure of an important safety net.

Upon entry of the results of the take-off performance calculation into the Flight Management Computer (FMC), the computer did issue a warning that was not entirely understood by the crew and was subsequently ignored. This resulted in the failure of a second safety net.

The second officer, who had initially performed a correct calculation on the captain's EFB, had been distracted by the need to give flight-safety instructions to the ground official who was travelling with the crew in the cockpit. As a result, the second officer restricted himself to comparing the results of the captain and first officer's EFBs, but he did not notice the low programmed engine thrust and the corresponding low reference speeds.

As a result, all of the available procedural safety nets failed during the flight-preparation stage and the aircraft taxied to the runway with incorrect take-off performance parameters. After entering the V speeds into the FMC and commencement of taxiing, no procedural safety nets were available to the crew and the incorrect take-off performance calculations remained undetected.

Take-off from runway 36C

Once the take-off thrust had been selected, the incident became inevitable, but flight crew intervention was still possible to reduce the severity of the outcome. For the crew, the lower than normal acceleration was not sufficiently noticeable to abort the take-off. Due to the lower reference speeds, the rotation point on the runway more or less coincided with the normal rotation point.

Shortly after the rotation, the aircraft did not become airborne straight away: this took a total of four seconds longer than for normal rotation. As the first officer was aware of the risk of a tailstrike and because the aircraft's tailstrike-prevention system intervened, the aircraft's tail did not touch the runway. The speed at which the aircraft left the runway was thus the minimum lift-off speed determined by the maximum angle off attack where tail contact with the runway was just avoided. After lift-off the first officer subsequently increased the speed to above the selected reference speed, as a result of which the aircraft's rate of climb was unwittingly increased to the minimum safe rate. Shortly afterwards, the captain detected the input error and the flight operations proceeded as normal from that point onwards.

Flight recorders

Of the available flight recorders, only the flight-data records were available. The cockpit voice recorder had

Incidents that were not investigated extensively

a recording capacity of two hours, and was therefore recorded over during the course of the 10-hour flight. No possibility to secure the recording was available to the crew. The cockpit voice recorder would have provided clarity regarding the exact circumstances that led to the input error. The Dutch Safety Board has repeatedly recommended to increase the recording capacity of cockpit voice recorders to enable more to be learned about incidents.

Investigation of a similar incident in 2009

On 31 August 2009, a similar incident took place involving the same type of aircraft and the same airline. The recommendations stemming from this investigation and the partial implementation of these recommendations were unable to prevent a reoccurrence of the incident. In this investigation, it was already concluded that adjustment of the procedures is not the way to prevent such incidents. The emphasis should be particularly placed on the prevention of input actions and unnecessary retyping of results. By the time of the incident in 2013, no progress had yet been made in this respect.

The investigation of the 2009 incident identified that take-off incidents constitute a global and frequently occurring problem. Earlier investigations have repeatedly resulted in recommendations to aircraft manufacturers regarding the need for an electronic safety net to be developed that can identify serious errors in performance calculations entirely independently of the cockpit crew's actions.

Measures taken by the airline

Almost immediately following the incident in 2013, the airline in question adjusted its procedures to place even greater emphasis on independent calculation of take-off performance parameters by the cockpit crew. Parallel to this, the airline has switched to an external system that is, in most cases, able to conduct an independent check of the input variables. This system has proved effective for the rest of the fleet of the airline involved. However, this system has limitations, and cannot prevent take-off performance incidents in all cases.

Another significant change that was made was to conduct the take-off performance calculation earlier in the preparatory stage in order to prevent time pressure immediately prior to take-off.

Exploratory investigation

An initial exploratory investigation conducted by the Dutch Safety Board identified that take-off incidents frequently occur following a failure by the cockpit crew to follow or fully follow the available procedures. Various international studies have established that input errors are influenced by a large number of factors such as fatigue, distraction, time pressure and reduced concentration, and that no procedures are available that can prevent these factors from occurring in all cases.

The European regulator EASA is currently conducting two studies intended to investigate the feasibility of a system that measures the aircraft weight for every flight and a system that identifies gross input errors.

The internal investigation report by the airline involved regarding the take-off incident in 2013 has been extended to include procedures and distractions to the cockpit crew. This has been done to such an extent that the Dutch Safety Board does not consider further investigation of this incident to be necessary. This statement in the quarterly report signifies the conclusion of this investigation by the Dutch Safety Board.

Classification: *serious incident*
Reference: *2013090*

Disorientation following take-off, Agusta Westland AW139, PH-EUJ, North Sea, 28 October 2014

Introduction

This serious incident was reported to the Dutch Safety Board six weeks after it occurred. By this time, the operator had already initiated its own internal investigation. The operator shared a draft report on this investigation with the Board in the second half of 2015. The text below is based on the operator's investigation and an additional investigation by the Board.

The occurrence

The helicopter, an Agusta Westland AW139, conducted a commercial passenger flight commissioned by the offshore industry. The aircraft took off from Den Helder Airport at approximately 6:30 p.m. for a flight that would call at multiple platforms in the North Sea during darkness. The weather conditions were mist and drizzling rain, visibility was 5 - 8 km and the cloud base was at 500 feet, resulting in the moon being obscured from view. The incident took place during departure from the fifth platform (G17A) on the route. In addition to the two crew members, who were both fully licensed and medically qualified, there were also three passengers on board at the time of the incident.

In accordance with the operator's standard night-time take-off procedure, the aircraft departed from the platform under visual meteorological conditions (VMC) with the intention of switching to a flight under instrument flight rules (IFR) when climbing through an altitude of 500 feet. At 380 feet above sea level, the commander, who was flying the aircraft at the time, asked the co-pilot to engage ALTA mode (Altitude Acquire mode, i.e. climb to a selected altitude and maintain it) of the Flight Director (FD, part of the autopilot). The co-pilot did so, but the FD then unexpectedly coupled with ALT (Altitude Hold) mode and IAS (Indicated Airspeed Hold) modes rather than ALTA and IAS modes. The aircraft climbed to 470 feet but then autonomously descended to 380 feet, the altitude at which the ALTA mode had been selected.

Reduced or poor visibility can contribute to spatial disorientation, especially in situations where the crew members are frequently switching their view from outside to inside (i.e. the instruments). The commander was not expecting

the helicopter's descent, and due to the unexpected motion of the helicopter he became spatially disorientated. The co-pilot stated that he had noticed the selected height and therefore had expected the descent. The commander tried to halt the descent by pulling back on the cyclic stick to raise the nose of the helicopter. However, the FD was not disengaged. As the autopilot is designed to maintain the selected altitude when in ALT mode, the helicopter responded to the commander's input by automatically reducing power by lowering the collective lever. This caused the airspeed to reduce gradually to zero knots IAS, with the helicopter's nose position at 21 degrees above the horizon, at an altitude of just under 500 feet.

Following the commander's request that the co-pilot engage ALTA mode, as a result of the limited amount of light in the cockpit, it took the co-pilot a few moments to find and press the button in question on the central console. It then caught the co-pilot's attention that the indicator for ALT mode subsequently lit up, instead of the expected indicator for ALTA mode. Two unexpected (from the co-pilot's perspective) alerts then went off to indicate that the altitude selected in ALT mode had been attained. He then pressed the ALTA button once more. Later, the co-pilot indicated that he prioritised this over monitoring the commander's actions. When the co-pilot focused his attention on the attitude and position of the helicopter, he noticed the high pitch and low airspeed. Consequently, the co-pilot concluded that the commander did not have the aircraft under control at that time, and began to coach him in order to resolve his disorientation. He instructed the commander to push the cyclic stick forwards and to pull on the collective lever in order to bring the helicopter to a normal flight path. The commander responded to these instructions. In accordance with the operator's procedures, this gave the co-pilot reason to not take over control of the aircraft.

Cockpit AW139.

Subsequently, when ALTA mode was selected once more at an altitude of 950 feet, the helicopter started to descend again. This once again led the commander to compensate by gradually pulling back on the cyclic stick until a nose pitch of 19 degrees above the horizon was attained. As before, the aircraft responded by reducing power, once again until an airspeed of zero knots IAS was reached. With coaching from the co-pilot, the commander once again regained control of the aircraft.

Following the second descent, the crew decided to climb to 2,000 feet. During this climb, the aircraft undertook a third descent. This time, the FD was used without input from the crew to achieve the selected cruising altitude of 2000 feet. A period of 3.5 minutes elapsed between take-off and achieving stable flight at 2000 feet. At this altitude, the crew members made sure that both the helicopter and they themselves were capable of continuing the flight. Subsequently, the flight was completed with no further incidents, landing on and taking off from two more platforms before returning to Den Helder Airport.

Procedures

There are ways to safely recover from a situation in which the aircraft is at an undesired pitch (unusual attitude) by using other autopilot modes (such as GA - or Go Around - mode). The pilots had not been made aware of these during their simulator training.

The co-pilot did not take over control of the aircraft when the commander was disorientated. At the time of the incident, the combination of a disorientated pilot (a mild form of pilot incapacitation, i.e. the physical inability to fulfil pilot duties) and an unusual attitude was not part of the training.

Aircraft

The operator stated that, both at the time of the incident and during test flights conducted with the helicopter at a later date, the installed autopilot software (version Phase 7) did not respond as described in the manufacturer's aircraft flight manual .

The ergonomics of the control panel of this type of helicopter meant that it took the co-pilot a long time to find the desired button. According to the crew, this is particularly a problem when flying this type of helicopter in the dark. Consequently, it took some time for the co-pilot to notice that the commander was spatially disorientated.

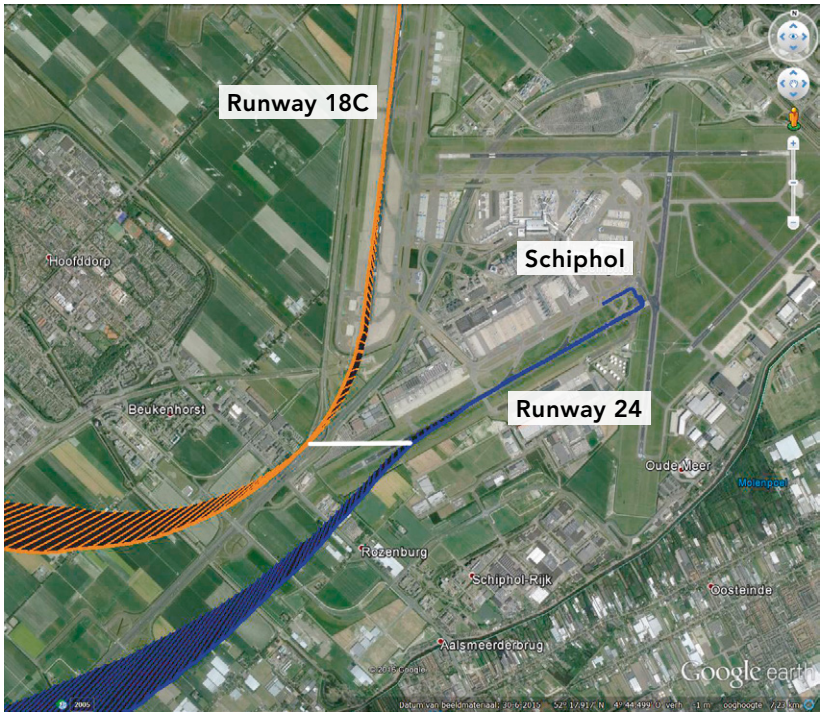
Measures taken by the operator

Based on the incident, the operator has identified a number of points for improvement in the training of its pilots, which enables them to respond more effectively in the event that a similar situation should recur in future. In 2016, a new training programme was implemented that includes greater attention to training based on recent incidents. Recovery from an unusual attitude and dealing with subtle forms of pilot incapacitation are now included in the training.

In response to this incident, besides improving its own pilot training, the operator also contacted the helicopter manufacturer regarding system improvements and procedures, the Royal Netherlands Meteorological Institute (KNMI) regarding weather reports in particular areas of the North Sea, and the oil and gas industry regarding collective risk analyses for offshore operations in the North Sea area. In addition, the operator shared as much information as possible with other users of the AW139.

Classification: *serious incident*
Reference: *2014124*

Incidents that were not investigated extensively



Overhead view of the flight paths of both aircraft (A320: orange, E190: blue). The white line between the flight paths indicates the minimum separation between the aircraft.

Go-around on runway 18C in conjunction with departing traffic from runway 24, Airbus A320, G-EZWR, Embraer ERJ 190-100 STD, PH-EZH, Amsterdam Airport Schiphol, 10 May 2015

At around 11.23, an Airbus A320 landed on runway 18C at Schiphol Airport. The runway configuration being used was landing on runways 18R and 18C and take-offs from runway 24. Traffic landing on runway 18C and traffic taking off from runway 24 was handled by a single runway controller. At that time, there was an inbound peak. The weather was calm en the visibility was more than 10 kilometres.

The airport's Automatic Terminal Information Service (ATIS) had informed the crew of the A320 that aircraft were taking off from runway 24. In the final approach to landing, the runway controller in question also passed this information on to the A320's crew. As they focused on preparations for the landing, the crew of the A320 noted the details concerning traffic departing from runway 24, but treated the information as being for information purposes only. After a routine, stable final approach to landing, the A320's speed remained slightly higher than normal. Also, the aircraft's speed was falling more slowly than intended, such that the A320's landing position would be shifted beyond the normal landing zone. As a result, the crew decided to perform a go-around. That is entirely in keeping with the company policy of the airline in question.

The control tower at Schiphol Centre was manned by a full complement of staff, in connection with the inbound peak. A supervisor was also present in the control tower. From the point of view of those in the control tower, the A320's approach appeared to be normal. According to the runway controller's statement, the situation appeared to be entirely stable. Partly due to the fine, calm weather at that time, the runway controller had no idea that the A320 would do anything other than perform a normal landing. While the A320 above the runway was engaged in completing its landing, he shifted his attention to another aircraft and, since he felt that the aircraft was as good as landed, he handed the A320's flight progress strip to the ground controller. Flight progress strips are passed to ground controllers to ensure that they have an aircraft's details to hand when the crew call them on their own frequency. Accordingly, in this case, it was the ground controller who first noticed that the A320 was performing a go-around. As the runway controller was convinced that the A320 had already landed, he initially looked for the aircraft at a different location. The A320's crew was focusing on the go-around and had not yet informed air traffic control that they were in fact performing this manoeuvre.

At that point, an Embraer E190 had commenced take-off from runway 24. In contrast to the information provided by the Automatic Terminal Information Service and, subsequently, also by the runway controller to landing air traffic, traffic taking off from runway 24 was not informed that landings were taking place on runway 18C. Given also that the crew of the A320 had not yet reported to air traffic control that they were performing a go-around, the crew of the E190 was unaware of this.

Go-arounds from runway 18C and take-offs from runway 24 involve conflicting departure routes.

On becoming aware of the situation, the runway controller immediately instructed the crew of the A320 to make a right turn. The E190 was now travelling too fast to abort the take-off. After it had left the ground, the E190 was instructed to make an "early-left turn". Having just left the ground, the crew of the E190 were not expecting any course change instructions. At that stage of a flight, that is not usual. On receiving the instruction to make a right turn, the A320's crew realized that this was related to traffic departing from runway 24. They started to make a right turn. This, together with the plane's resulting attitude, meant that they were unable to observe the E190 taking off from runway 24. The A320's pilot requested and received a heading from the runway controller, after which the A320's crew turned their aircraft onto a heading of 270 degrees.

The course instructions were equally unclear to the crew of the E190 (the runway controller had not given any reasons for his instructions regarding course changes) so, when they saw the A320 making a right turn, they wondered where that aircraft "had suddenly come from". After confirming that the A320 (which was climbing about as fast as they were) was not closing on them, the crew of the E190 shifted their heading by approximately 20 degrees to the left.

The crew of the A320 stated that at no point during the incident did they feel unsafe, and that they understood the instructions they had received from the runway controller. However, the crew of the E190 stated that they did not feel entirely "safe and comfortable" during the incident.

Classification: *serious incident*
Reference: *2015028*

Landing before the runway, Piper PA-28-161, PH-VFA, Texel International Airport, 23 January 2016

The flight departed from Texel International Airport. On board were the captain, in the left cockpit seat, and a certified pilot, in the right cockpit seat. After take-off from Texel International Airport the captain intended to perform five landings followed by a go-around ('touch-and-gos') at Texel International Airport and then fly to Lelystad Airport. The captain first performed three touch-and-gos with full flaps. He stated that visibility during final approach was poor because of the low angle of the sun. Because of the low angle of the sun, the airport operations manager positioned two white flashing lights to the left and to the right of the runway (at the second runway markings) to make the runway easier to distinguish during final approach. The captain stated that he maintained a slightly higher speed than normal during final approach. As a result, the pitch attitude was lowered such that he was just able to keep the flashing lights in view underneath the sun during final approach. The captain performed the fourth approach to runway 22 without using the flaps. He explained that the sun was shining right into his eyes, as a result of the aeroplane's increased pitch attitude and the position of the sun, which had lowered. Full concentration was required not to lose sight of the flashing lights next to the runway. As the captain was familiar with the airport, he assumed that he would see the beginning of the runway in time.

The certified pilot in the right seat advised the captain at a certain moment to select a little additional power, as the pilot felt that the aircraft was flying rather low. On this advice, the captain selected additional power. A little later, the pilot again advised to select additional power. A short time after that, the aircraft hit the ground in a field located before the beginning of runway 22. The captain stated that it was a relatively gentle landing, and that he only realised that the aeroplane had landed before the runway because of the roughness of the ground and the resulting vibration in the aeroplane. Subsequently, the aircraft crossed a ditch before the runway, causing the landing gear to get caught in the ditch and its legs to break off. The aeroplane came to a stop before the beginning of runway 22. Neither the captain nor the second pilot sustained any injuries. The aeroplane was heavily damaged.

Afterwards, the captain stated that he had been surprised by the moment when, and the place where, the aircraft hit the ground. This reveals that at a certain moment he was no longer fully aware of the aeroplane's altitude and position relative to the runway. The pilot in the right seat advised selecting additional power twice. This was done in a gentle tone of voice, however, without any apparent sense of urgency. This makes it clear that this pilot was also insufficiently aware of the aeroplane's critical situation. The captain stated that the limited visibility, which was partially caused by the low angle of the sun, demanded so much of his attention during final approach, that at a certain moment he was unaware that the aircraft was about to hit the ground in a field outside the airport grounds. The captain further stated that the decision to continue the approach was taken despite the lack of any perspective (depth perception) and was largely based on a pattern of expectations resulting from experience. The limited visibility was accepted as a matter of course.

The captain held a private pilot licence including a SEP(land) rating. He had 709 hours of total flight experience, including approximately 300 hours with the type of aircraft involved.

Classification: *accident*
Reference: *2016008*

The PH-VFA after the accident. (Photo: Aeroclub)

The Dutch Safety Board in four questions

1

What does the Dutch Safety Board do?

Efforts are being made in the Netherlands to minimise the risk of accidents and incidents as much as possible. When it nonetheless (nearly) goes wrong, a repetition can be avoided by carrying out a thorough investigation into the cause, separate from determining guilt. It is thereby important that the investigation is carried out independently of the parties involved. The Dutch Safety Board therefore chooses for itself what to investigate and thereby takes account of the independence of citizens from government bodies and companies.

Recently the Dutch Safety Board reported about the investigation into the causes of the crash of flight MH17, on the accident at the Den Uyl bridge in Zaandam and risk management for the transport of dangerous goods by rail.

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?

For more information see the website at www.safetyboard.nl
Telephone: +31 70 - 333 70 00

Postal address
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2509 CK The Hague
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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.

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

Sources photos frontpage:
photo 1: Royal Dutch Marechaussee
photo 2: National police