



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 Aviation Report

April - June 2017



The Dutch Safety Board published the report 'Schiphol air traffic safety' on the 6th of April 2017. This report concludes that the design of Amsterdam Airport Schiphol and the system for the handling of air traffic are so complex that structural problems occur. The limits of a safe handling of air traffic are nearing. A fundamental discussion is needed about the future of the aviation sector in the Netherlands and the possibilities and limitations of the growth of Amsterdam Airport Schiphol. Amongst others, this quarterly report pays attention to this matter.

The Dutch Safety Board launched two investigations into the causes of serious incidents that occurred at Amsterdam Airport Schiphol in the past quarter of a year. In the first occurrence, the tail of an airliner hit the runway during takeoff. In the second occurrence, the crew of an airliner received a takeoff clearance whilst the runway was still occupied by a vehicle.

Tjibbe Joustra,
Chairman, Dutch Safety Board



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Occurrences into which an investigation has been initiated

Tail strike, Boeing 777-35R(ER), Amsterdam Airport Schiphol, 21 April 2017

The tail of the Boeing 777 struck the ground during rotation at takeoff from runway 18C at Amsterdam Airport Schiphol. As a precaution, the crew decided to return to the airport. To avoid landing above the maximum landing weight, the crew dumped fuel overhead the North Sea and then returned to Amsterdam Airport Schiphol, where a safe landing was made.

Classification: *Serious incident*
Reference: 2017038

Crashed in poor visibility conditions, Alexander Schneider ASK-21, PH-733, Malden glider airfield, 25 May 2017

During a winch launch for a flight shortly after sunrise, both persons on board the ASK-21 (a trainee and an instructor) lost sight of the ground. Once they released the glider from the winch, the crew circled above the presumed location of the glider airfield. The crew only regained ground visibility at low altitude. At that moment the ASK-21 had drifted from the glider airfield to such a distance that a landing there was no longer possible. The instructor decided on landing in the treetops of the forest that surrounds the glider airfield. The glider dropped through the treetops and came to a stop hanging in the trees. Both occupants remained unharmed. The glider was heavily damaged.

Classification: *Accident*
Reference: 2017050



The glider after landing in the trees. (Photo: Aviation police)

Runway incursion with bird control vehicle, Canadair Regional Jet CRJ-900, Amsterdam Airport Schiphol, 31 May 2017

The crew of the CRJ-900 received permission from air traffic control to line up via intersection V3 for a take-off on runway 36L at Amsterdam Airport Schiphol. At that moment, the bird controller was conducting a runway inspection on runway 36L, with permission from air traffic control. In his vehicle, the bird controller had been monitoring the frequency of the runway controller. While still on the runway, he heard the CRJ-900 receiving take-off clearance. The bird controller immediately contacted the ground traffic controller and stated that he was still on the runway. The take-off clearance for the CRJ-900 was withdrawn.

Classification: Incident

Reference: 2017055

Emergency landing, Diamond DA-40 D, PH-EMW, Haaren, 22 June 2017

The Diamond DA-40, with a pilot and a passenger on board, had been flying from Eindhoven Airport under visual flight rules. After a flight time of approximately 25 minutes, when the pilot initiated the approach at Eindhoven, the engine failed to deliver the required power. The remaining engine power proved too low to remain at altitude. The pilot therefore decided to make an emergency landing in a meadow. After landing, the aircraft crossed a ditch, causing the undercarriage to break off and the propeller to hit the ground. Both occupants remained unharmed.

The Dutch Safety Board is investigating the cause of the failure of the engine to deliver the required engine power.

Classification: Accident

Reference: 2017060



The PH-EMW after the occurrence. (Photo: Commander)

Occurrences abroad with Dutch involvement into which an investigation was initiated by foreign authorities

Precautionary landing following failure of the electrical system, Piper PA28-161 Cherokee, G-WARA, near Mezősas (Hungary), 23 May 2017

The Piper Cherokee, with the pilot and a passenger on board, was on a flight from Oradea International Airport (in Romania) towards Brno-Tuřany Airport (in the Czech Republic). During the flight, the electrical system of the aircraft failed. The pilot decided to make a precautionary landing in a meadow. The propeller, nose landing gear and the engine mounting sustained damage during the landing. Both occupants remained unharmed.

The Transportation Safety Bureau of Hungary (TSB) has initiated an investigation into this occurrence. The Dutch Safety Board is assisting in the investigation because both occupants were Dutch nationals.

Classification: Serious incident

Reference: 2017053

Obstacle hit during final approach, Fokker F27-600 Friendship, 5Y-FMM, Garbaharey Airport (Somalia), 3 June 2017

The Fokker 27, with three crew members on board, was conducting a cargo flight from Mogadishu to Garbaharey (in Somalia) for the World Food Programme of the United Nations. Shortly before landing at Garbaharey Airport, the aircraft's right main landing gear collided with an obstacle. This caused the right main landing gear of the aircraft to collapse on landing and the right wing to come in contact with the ground. This caused the aircraft to make a ground loop, during which, part of the right wing became detached. Leaking fuel from the right wing then caught fire. None of the persons on board were injured. The aircraft was a total loss.

The Air Accidents Investigation Division of Kenya, the state in which the aircraft is registered, issued a notification of the occurrence to the Dutch Safety Board. The Dutch Safety Board has offered assistance to Kenya and to Somalia, the latter being the state where the accident occurred.

Classification: Accident

Reference: 2017056



The G-WARA after the precautionary landing. (Photo: TSB)

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Schiphol air traffic safety

In recent decades, Amsterdam Airport Schiphol has expanded to become one of Europe's main civil aviation hubs. The airport is sandwiched between densely populated urban areas, so trade-offs must continually be made between growth and the consequences thereof for the surrounding area. Safety needs to have a prominent place in these tradeoffs, as the effects and impacts of civil aviation accidents can be substantial.

Following a series of incidents (some of which occurred more than once), the Dutch Safety Board carried out an investigation to identify vulnerabilities in the safety system at and around Schiphol. The investigation found no evidence to suggest that safety at Schiphol is inadequate. However, the investigation did reveal a number of safety risks that need to be tackled integrally and systematically in order to guarantee safety both now and in the future.

Schiphol is a complex airport, both in terms of its infrastructure and in terms of how air traffic is handled. This complexity entails certain risks for air traffic. Schiphol's rapid growth is increasing that complexity. Air traffic controllers' workload is high, partly due to systematic capacity shortages. The control tower's work positions are all fully occupied, and there is not enough space on the ground for parking aircraft. Since 2014 the increase in air traffic has been associated by an increase in the number of serious incidents. All this indicates that Schiphol is approaching the limits of its ability to handle air traffic safely within the current operational concept. At Schiphol, a pattern is emerging. The parties concerned tend to accept new risks, for example due to economic or environmental considerations, and then take steps to mitigate any adverse effects on safety. Additional risks are, by example, posed by the large number of daily runway configuration changes, ground traffic crossing the take-off and landing runways each day, deviations from procedures to handle traffic, and capacity shortages at air traffic control. This results in an accumulation of risk mitigation measures which, in turn, create new risks. The Dutch Safety Board believes that, where reasonably possible, it is preferable to avoid risks rather than to mitigate them.

No single party at Schiphol takes responsibility for the integral safety of air traffic at and around the airport. Ultimately, the State has final responsibility for safety at Schiphol, but this responsibility has largely been delegated to the sector parties. However, the sector parties have been unable to deliver comprehensive, collective safety guarantees. The Schiphol Safety Platform (VpS) was originally founded to develop an integrated safety management system for the airport. However, the level of cooperation within this body is inadequate. The VpS is primarily reactive. In addition, it is limited to the operational level and to matters where the parties place common interests above their own interests.

Within the system, the role taken by the Ministry of Infrastructure and Environment is primarily that of a process manager, rather than the party with final responsibility. The Ministry's policy focuses neither on subject matter, nor on the overall results of individual parties' safety efforts. The Ministry has no overall picture of aviation safety at and around Schiphol, nor is it able to

Amsterdam Airport Schiphol. (Photo: Shutterstock/Pieter Beeks)



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determine whether the main safety objectives are being achieved. In addition, the Human Environment and Transport Inspectorate (ILT) lacks the knowledge and resources required to maintain effective in-depth oversight of the parties operating at Schiphol.

The decision-making process is dominated by the trade-off between growth and boosting network quality on one hand, and noise abatement on the other. Safety's role is implicit, in the form of a precondition. Everyone assumes that it is properly regulated. But whether this is really the case, and exactly how that is determined, is not made clear. Here, too, the State has stepped back from the decision-making process with regard to Schiphol's development and the trade-offs involved, which have actually been delegated to the Schiphol Community Council (Omgevingsraad Schiphol).

The manner in which safety is treated as a precondition in the decision-making process is inadequate in a number of ways. For example, there is no single criterion for assessing the overall safety performance of air traffic at and around the airport, or for which the State can be accountable. The new standards and enforcement system, which provides a framework for the usage of Schiphol up to and including 2020, has not been subjected to a integral safety analysis. The safety effects of changes to the air traffic control system are assessed using a standard that covers only a part of the operational risks involved. The overall impact on safety of successive changes has

not been determined. With regard to external safety, there are no clear and enforceable standards for group risk. The standard for local risk provides no guidance to the sector parties.

In the Netherlands, as in the rest of the world, there is a growing societal demand for air travel. The question is whether and, if so, how that demand should be accommodated at Schiphol. This investigation makes clear that further growth of Schiphol will require more than marginal adjustments to the existing policy. Indeed, this calls for a fundamental debate on the future of aviation in the Netherlands and on the options and limitations regarding Schiphol's further growth. From a safety point of view, the current system is approaching its limits. Many are calling for measures to be implemented, before 2021, that will enable Schiphol to grow beyond its current ceiling of 500,000 movements. The Dutch Safety Board feels that it will not be possible to make a decision on further growth, either before or after 2021, until the measures recommended in this report have been implemented and current and future risks have been systematically mitigated.

The Dutch Safety Board published the report on 6 April 2017. The report, including the recommendations, can be downloaded from the website of the Dutch Safety Board: <https://onderzoeksraad.nl/en/onderzoek/2211/investigation-into-air-traffic-safety-at-amsterdam-airport-schiphol>

Two cases of wing fire, Apex DR400/140B, PH-HLR and PH-SPZ, Rotterdam, The Hague Airport, 8 July 2013 en 4 July 2014

On the 8th of July 2013 and 4th of July 2014, respectively, two aircraft of the make and model Apex DR400/140B were seriously damaged by fire. In both cases, the fire started during taxi after landing on the left-hand side of the aircraft, destroying the left-hand wing. Since the two fires seemed of a similar nature and both aircraft were operated by the same flying club, it was decided to combine the two investigations into the cause of these fires.



Fire damage as a result of one of the occurrences at Rotterdam, The Hague Airport.

The investigation revealed, in both cases, that the heat source of the fires was the brake unit of the left-hand main landing gear. As a result of friction between the brake disk and the brake pads, the brake disk became excessively hot. It remained unclear what caused this friction: neither technical nor operational causes could be ruled out.

The heat in the brake unit was so severe that it was able to start a fire in the wing construction. The wing construction of this type of aircraft consists of wood, covered with polyester material. It was found that no fire-resistance certification requirements exist for wing covering materials. The combination of wood and non fire-resistant synthetic covering material enabled rapid development of the fire.

In the course of the investigation, it was discovered that at least 21 similar occurrences with the same aircraft type had been reported to France's aviation accident investigation bureau since 1988, the latest fire being in July 2016. All of these resulted in substantial damage to the wings, and some even in the loss of the entire aircraft.

The damage occurred on the left-hand side as well as on the right-hand side of the aircraft.

An on-board fire creates a dangerous situation, especially when the fire is detected after becoming airborne. While the Dutch Safety Board acknowledges that the Apex DR400 meets all legal airworthiness requirements, it is therefore considered advisable to make this type of aircraft less vulnerable to fire. For that reason, the Dutch Safety Board issued the following recommendation to the European Aviation Safety Agency (EASA):

Advise the manufacturer of the Apex DR400 to improve the aircraft's brake unit, to prevent overheating of the brake disk as a result of friction between the brake disk and brake pads.

The Dutch Safety Board published the report on 11 May 2017. The report can be downloaded from the website of the Dutch Safety Board: <https://onderzoeksraad.nl/en/onderzoek/2341/two-cases-of-wing-fire-in-apex-dr400-aeroplanes>

Crashed during winch launch, Rolladen Schneider LS4-a, PH-1061, Segelfluggelände Sultmer Berg (Germany), 26 July 2014

The LS4 made a winch launch from runway 18 from the glider airfield in Sultmer Berg (Germany) at about 16.00. According to eye witnesses, the glider made a steep climb as soon as it became airborne and then began to oscillate around its vertical axis. The glider reached an altitude of 50 to 70 metres, after which it banked over its left wing and crashed. The pilot was fatally wounded. The glider was destroyed.

During the investigation no technical defects were identified in the control systems. The elevator trim was found to be in a tail-heavy position.

The German Federal Bureau of Aircraft Accident Investigation (BFU) published the report on 15 June 2017. The Dutch Safety Board assisted in the investigation. The report can be downloaded from the BFU website: https://www.bfu-web.de/EN/Publications/Investigation%20Report/2014/Report_14_CX010_LS4_Northeim.pdf?__blob=publicationFile



*Accident site of the PH-1061.
(Photo: BFU)*

Crashed during flight, Fokker F27 Mk500 Friendship, 5Y-SXP, Serengeti National Park (Tanzania), 31 August 2014

The Fokker 27, with two pilots and a loadmaster on board, was conducting a positioning flight from Mwanza Airport (Tanzania) to Jomo Kenyatta International Airport (Kenya). During the cruise phase of the flight, the aircraft disappeared from the air traffic control radar screens at a distance of 22 nautical miles from the boundary of the Dar es Salaam Flight Information Region (FIR) with the Nairobi FIR. No radio contact could be established with the aircraft. A search action was initiated within an hour of the aircraft's disappearance from the radar. The wreckage of the aircraft was found close to the Andasiaka Camp in the Serengeti National Park the next morning, approximately 20 nautical miles south-west of the boundary of the Dar es Salaam FIR with Nairobi. The crew of the aircraft had not made a distress call to air traffic control. The crew did not survive the accident.

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the altitude and speed began to vary. Within a period of 25 seconds, the speed dropped from 150 to 63 knots. It then increased to 123 knots, after which it decreased again to 54 knots, which is below the stall speed of the Fokker 27. The variations in speed continued to increase, up to the last recording of the FDR. At this point, the aircraft had a speed of 318 knots and an altitude of 5861 feet, corresponding with the elevation of the accident location. The wreckage of the aircraft showed no indications of an explosion.

The cause of the accident could not be established due to the fact that the relevant passages of the CVR could not be read out. The FDR, which recorded a limited number of parameters, could not provide sufficient data to determine a cause of the accident.

The Accident Investigation Branch of Tanzania published the report in October 2015. The Dutch Safety Board assisted in the investigation

Classification: Accident

Reference: 2014095

Landing gear collapse during rotation at takeoff, Bombardier DHC-8-402, LX-LGH, Saarbrücken Airport (Germany), 30 September 2015

The Bombardier Dash 8 was in take-off from runway 09 at Saarbrücken Airport and was headed for Hamburg Airport (Germany). During rotation, after the nose landing gear lifted from the runway, the main landing gear of the

The flight had departed from Mwanza Airport at 16.26 UTC and climbed to FL170. At 16.33 UTC the crew made contact with the Area Control Center of Dar es Salaam, announcing they were climbing through FL105 and were expecting to reach the FIR boundary by 17.11 UTC. The air traffic controller stated that FL170 was clear of other traffic and that the crew should make contact again when they reached a reporting point at the FIR boundary, or when they were in contact with air traffic control at Nairobi. The crew acknowledged this message. This was the last radio contact with the crew. The air traffic controller at the Nairobi Area Control Center had already identified the aircraft on his screen before it had entered his airspace. When the aircraft disappeared from radar and failed to report its position when entering the FIR (as is required), this air traffic controller tried to contact the crew as well, without success.

The aircraft was found destroyed. The wreckage was spread over a distance of 350 metres. Much of the wreckage was destroyed by fire. Both the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) were retrieved. The FDR was read out successfully. However, the CVR was damaged to such an extent that the relevant periods of the recording could not be read out. An analysis of the FDR data showed that the speed at cruising altitude decreased slowly from 200 to 150 knots. The aircraft's altitude remained constant at first. Then



The position of the LX-LGH after it came to a halt. (Photo: BFU)

aircraft collapsed. The fuselage collided with the runway and the nose of the aircraft consequently came down again. The aircraft slid along the runway where it finally came to a stop. Smoke development in the cabin led to the aircraft being evacuated immediately by the cabin crew. There were no injuries. The aircraft was heavily damaged.

The investigation showed that while passing the rotation speed, the pilot not flying (PNF) had mistakenly set the handle for the landing gear in the 'UP' setting. The design of the landing gear system resulted in the retraction of the landing gear when the nose landing gear lifted from the runway during rotation. When the tail of the aircraft came into contact with the runway, the nose of the aircraft came down. Initially, the pilot flying (PF) moved the control column further back in an effort to lift-off from the ground. However, the nose of the aircraft had been forced down due to the tail strike. Therefore, the wings failed to generate sufficient lift to allow for lift-off. When the pilot flying realised what had happened, he reduced the engine power and concentrated on keeping the aircraft on the runway.

The data from the cockpit voice recorder showed that the crew, during previous flights on that day, and during the accident flight up to the time of the accident, had followed the checklists and procedures in an adequate and competent manner. This is in accordance with the regulations listed in their manuals. According to the investigation, there was a relaxed atmosphere in the cockpit. The flight from Saarbrücken to Hamburg would have been the fourth flight on that day. The flight was ahead of schedule. The investigation did not exclude the possibility of a decrease in the concentration level of the crew on the fourth takeoff in four hours. After the accident, the pilot not flying could not explain why she retracted the landing gear too early. Publications on the subject of human error describe such actions as slips. Slips occur unintentionally and inadvertently during activities that are trained correctly and which are executed often. Especially actions that are executed often, and thus require reduced concentration levels over time, can lead to a slip.

After the accident, the aircraft manufacturer adjusted the system logic for retracting the landing gear. This adjustment became mandatory under an airworthiness directive. The landing gear can now only be retracted if

the handle for the landing gear is selected in the 'UP' setting and when both the nose landing gear and the main landing gear have lifted off the ground.

The German Federal Bureau of Aircraft Accident Investigation (BFU) published the report in November 2016. The Dutch Safety Board assisted in this investigation because part of the landing gear was manufactured in the Netherlands. The report can be downloaded from the BFU website: https://www.bfu-web.de/EN/Publications/Investigation%20Report/2015/Report_15-1354-AX_DHC8_Saarbruecken.pdf?__blob=publicationFile

Control difficulties during roll-out after landing, Fokker F27 Mk050, 9Q-CBL, Beni-Mavivi Airport (Congo), 1 August 2016

The Fokker 50 conducted a passenger flight from Bunia Airport to Beni-Mavivi (Congo). On board were six crew members and 23 passengers. At a distance of 5 nautical

miles from the landing runway, the crew selected the landing gear down. An 'ANTI SKID FAULT' warning was displayed on the annunciator panel at the same time. The crew continued with the approach and set the flaps at setting 35, as prescribed by the abnormal checklist when the anti skid protection is inoperative. The co-pilot, who acted as the pilot flying, had difficulties setting the power levers in the ground idle detent after landing. Because of this, the aircraft decelerated slowly. For this reason the co-pilot applied more pressure to the pedal brakes. As a result, both tyres on the left main landing gear blew. The Fokker 50 came to a halt at about 250 metres before the end of the runway. The wheels of the left main landing gear had also turned 90 degrees relative to the longitudinal axis of the aircraft. The occupants disembarked the aircraft in the normal way. There were no injuries.

The Congolese Permanent Office of Investigations of Aviation Accidents/Incidents (BPEA) published the report on 9 January 2017. The Dutch Safety Board assisted in the investigation



Position of the left main landing gear after the occurrence. (Photo: BPEA)

Occurrences that have not been investigated extensively

needed during the winch launch. After release from winch cable the trainee conducted some exercises in the airspace to the north-east of the field. At an altitude of about 200 metres, he joined a left hand circuit and corrected for crosswind on the downwind leg. Up to then the flight had proceeded uneventful. The trainee turned to base leg too soon. He opened the air brakes to lose the extra height on advice of the instructor.

The trainee turned to final at the right moment and at a proper altitude. The glider's speed and angle of descent on the final approach were correct. Just before landing, at 11.41, the left wing struck a bush to the side of the landing strip at a height of about 2 metres. As a result the glider turned approximately 180 degrees about its vertical axis in the air and ended up backwards on the landing strip. The plane rolled for a distance of some 15 metres before coming to a standstill. Both pilots were unharmed.

The instructor afterwards declared that he had noticed the glider drifting off too much to the left towards the trees and bushes that run parallel to the field. He anticipated that the trainee would make a steering

correction but he did not. The trainee declared that the instructor had indicated that with the flown angle of descent, he would land in the target landing field.

The left wing became delaminated over a distance of 1 metre along the wingtip. A crack had developed on the underside of the wing, located at the inner side of the aileron. The aileron itself also sustained a fracture from the impact. Finally, the top of the vertical stabiliser suffered damage.

Analysis

The instructor had not been flying for several months due to the winter break and for personal reasons. The instructor's last flight had been during the summer of 2016. During the check flight that the instructor made earlier that day, together with a fellow instructor, the only feedback that the instructor received on his flight was that prior to commencing a turn, he should also visually check the opposite side of the direction of the turn. The three flights that the instructor made following the check flight were uneventful. The check flight in question was the first flight that the trainee had made since the winter break.

Hit a bush on final approach, Schleicher ASK-21, PH-1290, Langeveld Glider Airfield, 12 March 2017

The incident occurred on the first flying day of the gliding club after the winter break. During the briefing at the beginning of the day, the instructor on duty made reference to the weather conditions. He also discussed the members' lack of recent flying experience due to the winter break. He encouraged everyone to take the lack of recent flying experience into account when flying. Runway 09 was in use and the wind was from the south-east with a speed of about 4 knots. Visibility was more than 10 kilometres. The markings of the corners of the landing strip were further down the field (viewed in the landing direction) than usual, due to the wet condition of the front part of the field.

The glider, with an instructor and a trainee on board, took off at 11.37 for the purpose of a check flight. The instructor stated, that because of the insignificant crosswind component, not much upwind correction was



The PH-1290 after the occurrence. (Photo: flying club)

The instructor and the trainee both gave a generally similar statement regarding the approach to the target landing field. The trainee failed to adequately correct for the crosswind when approaching the target landing field. He estimated the wind speed to be 4 Bft (11 to 15 knots). This was higher than the estimate of the instructor, who estimated 4 knots. The Royal Netherlands Meteorological Institute (KNMI) reported a wind speed of 8 knots. The instructor declared that he assumed that he still had enough room for correction to allow the trainee to continue flying for as long as possible. He declared that up to that point he had had four pleasant flights that day, he was fit and alert and was already thinking about the debriefing. Because of this, he may not have noticed that the distance between the flight path and the bushes to the north of the landing field became insufficient to allow for a safe landing. When the instructor did realise this, it was already too late; the left wingtip struck the bushes.

The trainee declared that during the final approach he had been concentrating mainly on the flare, which was reinforced by the instructor's remarks to not change the position of the air brakes, so as to allow for the glider to land in the target landing field. The trainee failed to notice the drift in the direction of the tree line. Both the instructor and the trainee acknowledged that they suspect that their minds were fixated on the target landing field. The trainee believes that the target landing field was located too far to the north and in the direction of the tree line. The instructor disagreed with the trainee's opinion. The gliding club's safety committee which investigated the accident concurs with the view of the instructor.

The instructor held a Glider Pilot Licence with ratings for winching, flight instruction (ground, winch and aerotow), radio telephony and a Language Proficiency Endorsement. He held a valid medical certificate and had a total glider flying experience of 2,615 flights (554 hours), of which in excess of 1,300 flights (over 110 hours) on this type of glider. In addition, he had acquired 121 hours of flight experience on motor gliders and 10 hours on engine powered aircraft. The trainee had yet to acquire his pilot's licence. He had a total glider flying experience of 97 flights (94 on the ASK-21 and 3 on the ASK-23) and 11 hours.

The accident could occur because the trainee failed to correct for crosswind during the final approach, which caused the glider to strike a few bushes to the north of the landing strip. The instructor did not give the instruction to correct for drift and failed to take corrective action. Inadequate attention and lack of recent glider flying experience, by both the instructor and the trainee, may have contributed to the outcome.

From a didactic point of view it is often interesting to delay corrective action as long as possible, so as to attain the largest possible learning effect. It is of great importance that the instructor, as commander, remains vigilant at all times. After all, he is responsible for the safe execution of the flight.

The safety committee of the gliding club that operates the glider conducted its own investigation into the causes of the accident and notified the Dutch Safety Board of its findings.

Classification: Accident
Reference: 2017018

TCAS resolution advisory, Cessna 680 Citation Sovereign+, PH-HGT, vicinity of Twente Airfield, 4 April 2017

The Cessna Citation Sovereign+, a business jet, was on a flight under Instrument Flight Rules (IFR) from Eindhoven Airport to Twente Airport. When descending inbound Twente, air traffic control informed the crew to the presence of a glider in their vicinity. Clouds prevented the crew from making visual contact with the glider. A moment later they received a traffic alert from the Traffic alert and Collision Avoidance System (TCAS). The traffic alert later changed into a resolution advisory. The instruction from the TCAS to the crew was to maintain the current vertical speed. The crew followed this instruction, as is mandatory. The resolution advisory lasted for approximately 10 seconds. There was no visual contact with the glider during the resolution advisory.

The incident occurred in a Class E airspace at an altitude of 4,000 feet. The clouds were at the same altitude. The crew of the business jet declared that the glider must have

been flying right beneath the cloud cover. In Class E airspace, air traffic control separates IFR from other IFR traffic. IFR traffic is given information, if possible, regarding the position of traffic in their vicinity that is flying under visual flight rules (VFR). In Class E airspace, it is not mandatory for VFR traffic to be in contact with air traffic control. However, VFR traffic is required to maintain a minimum vertical distance of 1,000 feet below clouds or to keep a minimum horizontal distance of 1,500 metres from clouds. Amongst other things, this is in order to be more visible to other air traffic.

The identity of the glider and its pilot(s) could not be determined. For this reason they could not be contacted to verify the description of this occurrence.

Classification: Serious incident
Reference: 2017034

Near-collision with drone, Cessna F150M, PH-ARJ, in vicinity of Soest, 5 April 2017

The Cessna F150, with two persons on board, took off from Lelystad Airport for a flight under visual flight rules. Close to Soest, at an altitude of 1000 feet, the occupants of the Cessna noticed a civil drone in their flight path. They estimated that the minimum separation between their aircraft and the drone was 15 metres horizontal and 3 metres vertical. One of the occupants recognised the type of drone as a DJI Inspire. The pilot of the Cessna declared that there was no time to execute an evasive manoeuvre.

At the time of the incident, no Notice to Airmen (NOTAM) was active that referred to operations with drones in the vicinity of Soest. The maximum altitude that a drone is allowed to fly at in the Netherlands is 400 feet (120 metres) above ground or water. The drone was flying above this altitude.

Classification: Serious incident
Reference: 2017033

Occurrences that have not been investigated extensively

Emergency landing resulting in damage after engine failure, HB Brditschka HB 21/2400 B, PH-1501, Texel International Airport, 16 April 2017

The PH-1501 took off at 13.30 for a local flight from runway 22 at Texel International Airport. The pilot was the only person on board. The purpose of this flight was to fly a few circuits involving two 'touch and go's' and eventually a full stop landing. The wind direction and speed was 290 degrees with 16 knots and visibility was more than 10 kilometres. The first 'touch and go' was uneventful. During the climb and subsequent turn to the left, the engine briefly stalled and then stopped at an altitude of approximately 270 feet. The pilot stated on the Texel Airport frequency that he had an engine failure and that

he had decided to make an emergency landing. Just before landing, the pilot had to execute an evasive manoeuvre to avoid a local farm. Because of the evasive manoeuvre, the pilot had to choose a landing field close to a dike with an adjoining ditch. Shortly before landing, the nose wheel struck the dike, which caused the nose wheel to break off backwards. The aircraft landed in a field to the south-east of the airfield with the nose in an easterly direction. After landing, the pilot stated on the radio that he was unharmed. The airside operations officer had notified the emergency services, who were already on their way to the accident side.

After the accident, the engine was investigated by a maintenance company. No defects were found and the engine started without any problems.



The PH-1501 after the accident. (Photo: Aviation Police)

Due to the actual meteorological conditions at the time of the accident, formation of carburettor icing was suspected. According to the airport operations officer, the actual temperature during the incident at Texel International Airport was 11°C. The dew point temperature is not measured at the airport. The closest airport where this temperature is measured is Den Helder Airport, just south of Texel. According to the weather report at the time of the accident, the temperature at Den Helder Airport was 10°C and the dew point temperature 5°C at time of the accident. In such conditions, carburettor icing can occur at any power setting. It could not be established with certainty, however, that carburettor icing had been the cause of the engine failure.

The pilot held a Private Pilot Licence (PPL) and had a rating for Touring Motor Gliders. He had a total flying experience of about 554 hours, of which 49:35 hours on the type of aircraft involving the accident.

Classification: Accident
Reference: 2017037

Near-collision with drone, Diamond DA-42 Twin Star, D-GLBA, at Groningen Airport Eelde, 27 April 2017

A flying lesson under visual flight rules (VFR) on a twin-engine Diamond DA-42, started on the airfield at Nordhorn-Lingen in Germany for a flight to Groningen Airport Eelde. The crew were to fly a number of visual circuits. At approximately 16.10, after executing a 'touch and go' on runway 23 at Groningen Airport Eelde, the crew found itself just west of the town of Donderen at 600 feet within the local control zone (CTR) of Groningen airport. The crew was performing a climbing left turn when a white drone at approximately the same altitude was spotted. The crew of the DA-42 executed an evasive manoeuvre to the right, while the drone made an evasive manoeuvre downwards. According to the crew of the DA-42, the horizontal distance between them during the evasive manoeuvre was approximately 30 metres. The crew continued the flight and reported the incident to air traffic control. The drone could not be traced.

No further information is available on the drone in question. In the Netherlands, flying drones within the control zone of an airport is prohibited.

Classification: Serious incident
Reference: 2017042

Hard landing, Rolladen-Schneider LS4-a, PH-1083, Leeuwarden Airbase, 7 May 2017

The PH-1083, a Rolladen Schneider LS4 glider, was used by the gliding club for advanced flight training and the first cross country flights for trainee pilots. On 7 May 2017, at Leeuwarden airbase, the PH-1083 was planned for a local solo flight by a trainee pilot. The weather information from the Leeuwarden airbase (METAR EHLW) reported visibility of more than 10 kilometres with a cloud ceiling of 22,000 feet. The wind speed was 11 knots with a variable wind direction between 300 and 020 degrees. The take-off and landing grass runway was 03 and the launch path was situated to the right (south-east) side of the grass runway.

The winch launch and flight went uneventful. At 12.50, the trainee pilot made a downwind call over the radio. According to the trainee, the landing area was not sufficiently free of other gliders to allow him to land safely. He therefore stated that (in accordance with the general briefing earlier that morning) he was going to land on the path between the winch and the takeoff position. This meant he would have to fly over two stationary gliders on the ground just before landing. The trainee stated that he concentrated too much on securing enough clearance to pass over these gliders, but in doing so, he stated he neglected to mind the airspeed. The instructor's observation was, that when passing over these two gliders at sufficient speed, the trainee pulled up the nose a little and crossed the threshold at approximately 15 metres with half-opened airbrakes. According to the instructor, no nose down steering correction followed, neither were the airbrakes retracted. For this reason, according to his statement, the speed continued to drop and the glider flew over the launch path at a height of approximately 2 metres. The latter led to a hard landing with the main wheel being pushed inside. An examination by a general practitioner showed that the trainee flyer had suffered no

physical effects. The landing gear mechanism sustained severe damage.

The trainee pilot, with a total experience of 223 flights and 38 hours, started his training in the spring of 2014 and had been flying solo since April 2016. The accident flight was his 37th solo flight and his 25th start on this type of glider. It was his 10th start on this type in 2017. The trainee pilot did not hold a Glider Pilot License (GPL); for this reason the flight was supervised by the instructor.

Classification: Accident
Reference: 2017043

Undershoot on final, Alexander Schneider ASK-23B, PH-860, Deelen Airbase, 20 May 2017

The pilot of the PH-860, a Schleicher ASK 23B glider, took off around 16.00 for a local flight from the gliding airstrip at Deelen Airbase. The pilot conducted a winch launch from runway 20 in a southerly direction and disconnected the cable at an altitude of approximately 500 metres. The pilot flew to the training area in search of a thermal. When it became clear to him that there was no usable thermal, the pilot decided to return to the gliding airstrip for a landing in a southerly direction.

At an altitude of 220 metres, the pilot joined a right hand circuit. After the pilot conducted the landing checks and had made the downwind call, he subsequently turned onto base leg. On base leg, the pilot experienced an increased descent rate and for this reason decided to shorten the circuit and to turn in earlier towards final approach. He turned onto final approach at an altitude of approximately 100 metres and then opened up the airbrakes halfway. As the glider continued to descend more than desired, the pilot decided to close the airbrakes again. As the glider's rate of descent still remained high, the pilot made a correction to the left to avoid trees. The glider's speed dropped, whereupon the pilot pushed the nose of the glider down in an effort to increase speed. The glider's right wingtip struck several trees after which the glider turned right 180 degrees and crashed. During the crash, the glider struck a fence which caused the fuselage to break in two places. The pilot was slightly injured.

Occurrences that have not been investigated extensively

The pilot had a total flying experience of 113 hours, of which 16.5 on this type of glider. He had flown 3.8 hours in the last three months. In 2017, he had made six flights, of which five on an LS4 and one on an ASK-21. The accident flight was his first flight on an ASK-23 in 2017.

At 15.55, the weather report at Deelen airbase was: wind direction 230 degrees, variable between 180 and 270 degrees, with a wind speed of 11 knots; visibility more than 10 kilometres; few clouds at 5,500 feet; broken clouds at 6,000 feet; full overcast at 6,600 feet; temperature 16°C, dew point 7°C and the air pressure was 1021 hPa.

The cause of the accident may be the result of a combination of factors: the pilot's incorrect estimation of the glider's rate of descent on final approach, the unexpected higher rate of descent on base leg and on

final in combination with the variable wind. It has been found unlikely that the glider had a technical fault.

The safety committee of the gliding club carried out its own investigation into the cause of the accident and its findings were made available to the Dutch Safety Board. The findings of the safety committee, as outlined in the safety committee's report, correspond with the factors referred to in the description above. Contributing factors include:

- Possible target fixation;
- Possibly being used to low approaches, which may have become the unofficial norm at the club;
- The pilot's limited recent flying experience in general and on the type of aircraft in question.

Classification: Accident

Reference: 2017047

Ground loop during landing, Piper PA-18-150 Super Cub, OO-POU, Lelystad Airport, 27 May 2017

At about 11.00, the Piper Super Cub flew from the Biddinghuizen glider airfield to Lelystad Airport to refuel the aircraft. At Lelystad Airport runway 05 was in use. The wind direction was 140 degrees with a speed of 15 knots. The pilot was flying at a speed of 60 miles per hour (Mph) on final approach, and banked to the right to compensate for the crosswind from the right. According to the pilot, the first contact of the aircraft with the runway was on the right wheel and tailwheel, followed by the left wheel touching the ground. After landing, the right main landing gear collapsed after which the aircraft made a ground loop to the left and ended up in the grass next to the runway. The aircraft was damaged. The pilot was able to exit the aircraft unharmed.

The investigation showed that the landing gear shock strut had broken off, which caused the right main landing gear to collapse upwards. A visual inspection of this landing gear shock strut revealed no corrosion. No further investigation was conducted into the cause of the fracture. For this reason it cannot be established whether the landing gear shock strut was already damaged prior to the accident.



The PH-860 after the accident. (Photo: Gliding club)

The Pilot Operating Handbook of the Piper Cub makes no reference to a crosswind limit or to any identified maximum demonstrated crosswind component.

The pilot held a Private Pilot Licence (PPL) and had a total flying experience of 3,500 hours, of which 30 hours on the type of aircraft in question.

Classification: Accident

Reference: 2017051

Landing with a torn off nose landing gear, Lancair Legacy 2000, PH-LIS, Breda International Airport, 28 May 2017

A Lancair Legacy, with a pilot and a passenger on board, was taxiing to runway 25 at Breda International Airport. Suddenly the pilot noticed that he had left his sunglasses

on top of the left wing of the aircraft. He continued taxiing to the holding point of runway 25, where he stopped the aircraft. The pilot removed his headset, unlocked the cockpit canopy and lifted it a little to retrieve his sunglasses from the wing. After which he closed the canopy again. After retrieving his sunglasses, the pilot accidentally sat down on his headset, which fell apart. As a result, he needed to re-assemble his headset, whereafter he executed the engine power checks. The Lancair Legacy continued taxiing to the takeoff position on the runway for takeoff. Shortly after lift-off, at an altitude of about 2 metres, it turned out that the canopy was not properly closed; it opened. The pilot tried to close the canopy and during this action he accidentally pushed the control stick forward. The nose wheel hit the runway and broke off. Nevertheless the aircraft got airborne.

The pilot decided to return to Breda International Airport and to execute a landing on the grass runway with the

main landing gear only. After landing, the propeller hit the ground after which the pilot lost control of the aircraft. Before the aircraft came to a standstill, the tip of the left wing struck the propeller of an aircraft that was parked next to the grass runway. Both persons on board of the Lancair were unharmed.

The before take-off checklist of the Lancair Legacy 2000 contains 18 items. One of these items refers to verifying whether the canopy of the aircraft was closed and locked. The pilot stated that he completed this checklist from memory. The pilot had a flying experience of 760 hours, of which 14 hours on the Lancair Legacy 2000

Classification: Accident

Reference: 2017052



The OO-POU after the incident. (Photo: Lelystad Airport)



The PH-LIS after the emergency landing. (Photo: Aviation Police)

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 the air traffic safety at Amsterdam Schiphol, about earthquake risks in Groningen and about a lifting accident at a building site in the city centre of The Hague.

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 safetyboard.nl
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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: Shutterstock/Pieter Beeks

photo 2: BFU

photo 3: Aviation Police