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 sufficient to learn lessons, the Board does not conduct any further investigation.

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

Quarterly Aviation Report

July - September 2022

In the last quarter, the Dutch Safety Board concluded four investigations into airproxes. Three further investigations were started this quarter. Airproxes are situations in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised. According to the information available, the Dutch Safety Board classifies reports of airproxes. In the case of the classification 'serious incident', the Safety Board launches an investigation. For a number of years, the airprox has been the type of occurrence most frequently reported to the Dutch Safety Board. In most cases, airproxes involve aircraft flying under visual flight rules (VFR). In these situations, normally speaking, the pilots themselves are responsible for maintaining separation with other aircraft.

The Safety Board is attempting to gain a greater insight into the common factors that played a role in the investigated airproxes. A notable development since 2021 is the increase in the number of reports of airproxes involving a motorised aircraft and a glider, which took place around aerodromes being used for glider activities. The Safety Board has considered these types of occurrences in past quarterly reports. In a future report, the Safety Board will present the findings of its exploratory investigation into airproxes.

Stavros Zouridis
Vice chairperson Dutch Safety Board


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Occurrences into which an investigation has been launched

Airprox, Piper Aircraft Corporation PA-18-135 and Reims Aviation S.A. F172P, near International Airport Teuge, 28 April 2022[1]

The PA-18 had taken off from Runway 08 and was making a right turn in the circuit. At that moment, another aircraft passed the PA-18 at a short distance overhead. The pilot of the PA-18 then made an evasive manoeuvre to avoid a collision. Both aircraft continued their flight.

Classification: *Serious incident*
Reference: *2022127*

Detached control stick, Alexander Schleicher ASK 13, Nistelrode glider airfield, 4 June 2022[2]

During an instruction flight, the control stick came loose during the winch launch at a height of approximately 50 metres. The instructor was able to replace the control stick and continue the flight.

Classification: *Serious incident*
Reference: *2022101*

Loss of control during touch-and-go, AQUILA AT01, Breda International Airport, 2 July 2022

The flight instructor and student pilot were on a training flight. During a touch-and-go in crosswind conditions, a loss of control occurred. The aircraft bounced, rolled to the right and made a ground swing. The aircraft was substantially damaged. Both occupants were uninjured.

The crashed AT01. (Source: Airport Operations, Breda International Airport)

Classification: *Accident*
Reference: *2022081*

1 This occurrence was reported to the Dutch Safety Board on 30 August 2022.
2 This occurrence was reported to the Dutch Safety Board on 27 July 2022.

Occurrences into which an investigation has been launched

Flight control problems, Boeing 737-800, en route Heraklion - Amsterdam (Greece), 8 July 2022

During a passenger flight from Heraklion in Greece to Amsterdam in the Netherlands, the pilots noticed that the aircraft reacted more slowly to their control commands than usual. They therefore decided to make a precautionary landing at Athens Airport. The aircraft made a safe landing.

Greece's Air Accident Investigation and Aviation Safety Board (AAIASB) has delegated the investigation to the Dutch Safety Board.

Classification: *Serious incident*
Reference: *2022086*

Collision between paramotors, near Zeewolde, 23 July 2022

Two paramotors collided while flying. One of the pilots lost control of his paramotor and ended up in a tree. He was unharmed. The other pilot made a safe landing. Both paramotors were damaged.

Classification: *Accident*
Reference: *2022100*

Fly-away after loss of connection, DJI Matrice 210 V2, Amsterdam, 26 July 2022

The operator had the drone take off from a bridge for the flight controls check. Shortly after, the drone stopped responding to instructions. This resulted in a fly-away. The drone hit a tree and was damaged.

Archive photo DJI Matrice 210 V2.

Classification: *Accident*
Reference: *2022102*

Airprox, Cessna 172P and Reims Aviation S.A. F150H, near International Airport Teuge, 12 August 2022

The two aircraft passed each other in the traffic circuit at a short distance. Both pilots made an evasive maneuver and continued their flight.

Classification: *Serious incident*
Reference: *2022131*

Passenger suffered injury on landing, Balóny Kubicek BB120P, Soest, 23 August 2022

The pilot of the hot air balloon landed in a field. During landing one passenger suffered a fractured bone in the forearm.

Classification: *Accident*
Reference: *2022122*

Airprox, Van's Aircraft, Inc. RV-7A and Cessna 172P, near Kempen Airport, 31 August 2022

The RV-7A performed a measurement flight. During this flight, the RV-7A followed the traffic circuit, flying over the measurement setup parallel to the runway. The Cessna 172P was performing an instruction flight and made a touch-and-go. Both aircraft came into close proximity twice; the first time in line with the runway and the second time on crosswind. In the second case, the pilot of the RV-7A made an evasive manoeuvre to avoid a collision. Both aircraft then continued their flight.

Classification: *Serious incident*
Reference: *2022132*

Rejected takeoff, Boeing 777-222ER, Amsterdam Airport Schiphol, 2 September 2022

During takeoff, the Engine Indicating and Crew Alerting System (EICAS) generated a warning in the cockpit regarding the bleed air system, after which the pilots rejected the takeoff.

Classification: *Serious incident*
Reference: *2022128*

Flap control lever released, Schempp-Hirth Nimbus 3T, Terlet glider airfield, 4 September 2022

On final, the flap control lever moved unintentionally out of the landing position. The glider then quickly lost height, preventing the pilot from reaching the landing strip. The glider ended up in the trees and was severely damaged. The pilot was unharmed.

The glider in the trees. (Source: Pilot)

Classification: *Accident*
Reference: *2022129*

Occurrences abroad with Dutch involvement into which an investigation has been launched by a foreign authority

Runway excursion, Fokker F27 Mk 0050, Rubkona airstrip (South Sudan), 16 July 2022

The Fokker 50 was performing a cargo flight. There were three crew members on board. During landing, the left main landing gear collapsed after which the aircraft came to a stop next to the runway. The occupants were unharmed. The aircraft sustained damage to, among other things, the left propeller, the left wing and the nose.

The South Sudan Accident Investigation Department has launched an investigation into this occurrence. The Dutch Safety Board has offered assistance, as the aircraft was designed and manufactured in the Netherlands.

Classification: *Accident*
Reference: *2022097*

Windshear during landing, Fokker F27 Mk 0050, Mogadishu Airport (Somalia), 18 July 2022

The Fokker 50 was operating a flight from Baidoa to Mogadishu in Somalia. There were 6 crew members and 30 passengers on board. During the final approach to Runway 05, the aircraft experienced windshear at a low altitude, after which the pilots lost control of the aircraft. The Fokker 50 then hit the runway hard and came to a stop on its back. A fire broke out. Three passengers suffered minor injuries. The aircraft sustained heavy damage.

The Aircraft Accident Investigation Branch (AAIB) of Somalia has launched an investigation into this occurrence. The Dutch Safety Board has offered assistance, as the aircraft was designed and manufactured in the Netherlands.

Classification: *Accident*
Reference: *2022098*

The crashed Fokker 50. (Source: AAIB Somalia)

Landing on occupied runway, Boeing 737 and Embraer ERJ 170-200 STD, Lyon-Saint Exupéry Airport (France), 5 September 2022

The Boeing 737 landed on Runway 17L, while an ERJ 170 of a Dutch airline was still on the runway and taking off at that time.

The French Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) has launched an investigation into this occurrence. The Dutch Safety Board has offered assistance.

Classification: *Accident*
Reference: *2022133*

Published reports

Paramotor trike crashed during flight, D-MJBE, Didam, 2 June 2020

The pilot and sole occupant of a paramotor trike, consisting of a wing with a motorised trike, took off from a field in Didam. The pilot would make a flight together with another, experienced, pilot, each in his own paramotor trike. It was the pilot's first flight as licensed pilot since he had obtained his licence a few days earlier. Shortly after the pilot took-off, the weather circumstances suddenly changed strongly, with a sharp increase in wind and turbulence. The pilot lost control of the paramotor trike due to the sudden worsening of the weather conditions. He was unable to regain control and ended up in a spiral flight. During this spiral flight, the G-forces were so high that the pilot probably lost consciousness and the aircraft ultimately crashed. The pilot was fatally injured.

The aviation weather forecast that day mentioned that a 'vore', a convergence line between warm and cold air, was passing from west to east over the Netherlands. Shortly after its passage, turbulence and wind would increase strongly, locally up to 20 knots. The radar images showed that this convergence line passed Didam at the moment that both paramotor trikes had just taken off. Although the pilot had consulted weather forecast sources via various apps prior to the flight, he was not aware of the expected weather change. The other pilot was not aware of this either.

The pilot had purchased the wing during his training. The wing manufacturer Pilot's Manual states among other things that the wing is suitable for experienced, qualified tandem pilots and that the wing is intended for competent pilots only and is not suitable for beginner pilots nor those under training. On the other hand, according to the applicable standards, the wing was classified as a B wing, which means that the wing is suitable for all types of pilots, including pilots in training. The manufacturer stated that this wing was designed and tested as a paragliding wing. The use of this wing for a paramotor trike results in different flying characteristics. Therefore, it is not clear whether the type of wing was suitable for this beginner paramotor trike pilot.

The investigation also revealed that the judicial definition of a powered paraglider is not suitable for a paramotor trike and that a paramotor trike is not mentioned separately in aviation legislation. Paragliding has developed further over the years with the introduction of trikes, but the legislator has not actively followed this development. The result of this is that these paramotor trikes have been flown since approximately 2010 while no legal regulations exist for this form of aviation. The Ministry of Infrastructure and Water Management (I&W) was aware of this and started developing laws and regulations in 2015, in cooperation with the Royal Netherlands Aeronautical Association (KNVvL). Despite KNVvL's insistence, I&W has not yet resolved this situation due to a lack of capacity and priority. Meanwhile, legislation and regulations are being developed in the form of a Decree that is expected to be implemented before the end of 2022. The lack of applicable legislation and regulations had no influence on the occurrence of the accident.

Paramotortrike. (Source: KNVvL)

More accidents and incidents involving student and beginner paramotor pilots have occurred in the recent past. These incidents, and this accident, have shown that the training, both theoretical and practical, of paramotor (trike) pilots differs from the training of other pilots in recreational aviation. Paramotor (trike) pilots use the same airspace and must partly meet the same requirements as other pilots in recreational aviation. Both the training of student pilots and the operation of licensed pilots therefore require a professional approach. The KNVvL, paramotor flight division, has started to harmonize the training courses. This is a good development but also the licensed pilots must realise that paramotor (trike) flying requires a professional approach. For the student pilots, the flight schools are the first choice. Licensed pilots are responsible for themselves, supported by the KNVvL.

The Dutch Safety Board published the report on 5 July 2022.

Reports with Dutch involvement published by foreign investigation authorities

Field landing with damage, Glaser-Dirks DG-200/17 C, PH-699, Mátranovák (Hongary), 14 May 2022

The pilot of the glider registered in the Netherlands made a landing, with the last part of the approach taking place over descending terrain. The terrain ended in steeply rising ground. When landing on the terrain, the tail of the glider broke. The pilot was unharmed.

The Transportation Safety Bureau (TSB) of Hungary concluded that the pilot did not correctly assess the terrain characteristics when making the field choice. At lower altitudes, the pilot then failed to notice the steep slopes of the terrain in the intended landing area. He then failed to take the necessary corrective actions. The aircraft's flare happened late, abruptly and was not adapted to the steeply rising ground, the TSB concluded.

The TSB of Hungary published the report in October 2022.

Classification: *Accident*
Reference: *2022048*

The DG-200. (Source: TSB of Hongary)

Investigated occurrences

Airprox, Tecnam P2010, F-HRAT and Reims Aviation S.A. F172G, PH-KRI and Cessna 172P, PH-SEL, International Airport Teuge, 29 November 2020

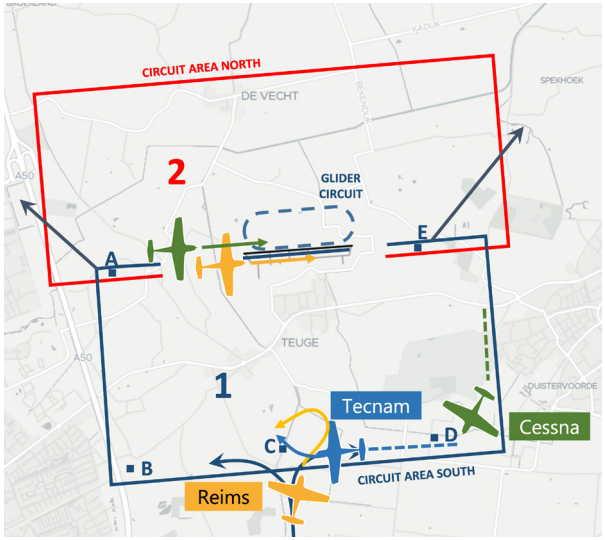
The Tecnam P2010 and the Cessna 172P were flying in the circuit at Teuge International Airport. The Tecnam was the first to enter the circuit, and was completing landings on Runway 08, followed by an immediate takeoff (known as a touch-and-go). The Cessna was travelling from Rotterdam The Hague Airport, on a training flight, and it too had completed a touch-and-go. The occupants of both aircraft were an instructor and a trainee pilot. The third aircraft, a Reims F172G, was approaching from a southerly direction on the prescribed approach route and flying at an altitude of 700 feet AAL[3] via reporting point Sierra, with the intention of joining the circuit. The Reims was returning from a pleasure flight with a pilot and two passengers on board. The pilot of the Reims stated that he had reported by radio that he had reached point Sierra. The pilot of the Tecnam stated that he did not hear the report by the Reims at point Sierra; according to him, no such report was made.

Based on the information from the three pilots involved, a limited reconstruction of the flights was made. The available radar data was insufficient. In addition, radio messages on the Teuge Radio frequency were not available, because they are not recorded.

The figure below contains two sketches, each representing the situation at a given moment. See figure, situation 1: While entering the circuit, the pilot of the Reims first initiated a turn to the right, having made a mistake about the runway in use. He then observed the Cessna, which at the time was at the start of its downwind leg. The Tecnam was flying around halfway along the downwind leg when the crew observed the Reims approaching, at the relative position of around 11 o'clock. The Tecnam avoided the Reims by turning to the right, and initiating a climb. The pilot of the Reims steered back to the left, which brought the aircraft closer to the runway than usual.

3 Above aerodrome level.

The pilot continued the left-hand turn to correct to the route for the downwind leg.



Circuit area Teuge Airport: situation 1 for downwind and entering traffic, situation 2 for traffic on final.

As the Reims entered the circuit, the Cessna was at the start of the downwind leg. The crew of the Cessna saw the Reims and the Tecnam almost collide. The Tecnam, which was flying in the front, and the Reims each continued their own route on the downwind leg to Runway 08. The instructor in the Cessna observed the Reims completing a wide turn to the left, and had the impression that the Reims intended to leave the circuit area.
While the Cessna was flying on the base leg, the instructor in this aircraft saw that the Reims *'... had in fact turned back and was flying towards final approach'* and then *'flew beneath the Cessna with a height difference of less than 100 feet'*, see situation 2. By this time, the Tecnam had landed.[4] The Reims landed on Runway 08, and by way of evasive manoeuvre, the Cessna flew a go-around, subsequently landing on the next circuit.

4 The Tecnam is not shown in situation 2, because at that moment the aircraft had already landed.

Investigated occurrences

The pilot in command of the Tecnam referred to the weather conditions at Airport Teuge as CAVOK.[5] The METAR information from the nearby Deelen Air Base indicated that visibility was 10 kilometres or more, with full cloud cover (OVC 240) with individual clouds at 1,600 feet (FEW 016).

Analysis
Below is an analysis of the two consecutive situations on 29 November 2020. Both situations are then considered in a broader context.

About situation 1
According to the air traffic rules, the Tecnam had priority over the Reims. However, the pilot of the Reims stated that he had not seen the Tecnam. The pilot of the Reims did observe the Cessna, which was positioned at the start of the downwind leg. The crew of the Tecnam only saw the Reims after it had entered the circuit area. This resulted in an airprox. The crew of the Tecnam and the Cessna both consisted of two pilots, offering the advantage that both were able to look out for other air traffic. Despite good visibility and radio use, they completely failed to observe each other, both only becoming aware of the presence of the other aircraft, when they were close together. Whether or not the pilot of the Reims reported having reached position Sierra cannot be confirmed due to the absence of recorded radio messages. As a result the statements of the pilots involved in situation 1 remain contradictory.

About the development to situation 2
The pilot of the Cessna had the impression that the Reims did not intend to continue its flight to the runway. Once on base, he observed that the Reims (a high-winged aircraft) had in fact turned towards the runway. Because of its 'low wing', while on base, the pilot of the Reims had almost no view of the Cessna approaching from the rear while completing his turns. By this point, the Cessna had caught up to such an extent that it appeared about to overtake the Reims in terms of landing order.

5 CAVOK stands for cloud and visibility OK.

It was not possible to conclude whether or not the Reims remained within the circuit area. If the Reims did remain within the circuit area, the Cessna was not permitted[6] to overtake the Reims. Both pilots continued their approach to the runway, which led to an airprox, during final.

Other airproxes in the circuit area at Teuge International Airport
The Dutch Safety Board has investigated two further airproxes in the circuit area of Teuge Airport, which demonstrated similarities with this airprox. The results of these serious incidents were published in previous Quarterly Aviation Reports.[7] A further four airproxes[8] were reported to the Dutch Safety Board, classified as incidents. In all six cases, traffic approaching (cross-country flight) or local traffic practising takeoffs and landings were involved and all traffic was tuned to Teuge Radio. Three airproxes occurred during or immediately after entering the circuit; the other three were the result of cutting up or overtaking the aircraft ahead. In one case, a crew decided to abort the approach, and to return to point Sierra.

Reduced effectiveness of see-and-avoid resulting in airproxes in the circuit
In these and other investigated airproxes, it is no easy matter to determine the cause of pilots entirely failing to observe other traffic, or observing traffic at greater distances, but not in close proximity (with the resultant collision risk). In one of the previously investigated airproxes, weather conditions probably played a role. On the basis of a study by the Australian Transport Safety Bureau (ATSB) it is known that – despite good visibility – atmospheric effects or the presence of complex backgrounds (contour interaction) can have a negative influence on the observability of other traffic.[9] An aircraft that is on collision course often appears to be stationary in the vision of the pilot (no relative motion), as a result of which it does not stand out easily. According to this

6 Article 4, Standard air traffic circuit rules.
7 Quarterly Aviation Report 2021-3: airprox PH-SWP and PH-TGV; Quarterly Aviation Report 2021-4: airprox PH-ZVC and PH-IIS.
8 Two of these airproxes took place in November and December 2020, and the other two in July and August 2021.
9 ATSB, *Limitations of the See-and-Avoid Principle*, April 1991.

study, in such situations, the concept of see-and-avoid is a flawed and unreliable method of avoiding collisions.

Safer response in the event of insufficient separation or leaving the circuit area
This and the previously mentioned airprox investigations reveal that even if they did notice that they were coming too close to other air traffic in the circuit, or were at risk of doing so, the pilots involved in most cases nonetheless continued their approach to the runway. This resulted in additional collision risks. It is safer to abort the approach, to leave the circuit area[10] and to return to reporting point Sierra, for a subsequent approach.

For every circuit area there are no explicit rules on how approaching traffic should react when it finds itself (unintentionally) leaving the circuit area, in order to be able to maintain the necessary separation. For Teuge International Airport too, this means that in that situation, pilots are best advised to return to reporting point Sierra, before re-entering the circuit area.

Classification: *Serious incident*
Reference: *2022089*

10 This does not necessarily apply to traffic that aborts final approach, see also Article 6, Standard air traffic circuit rules.

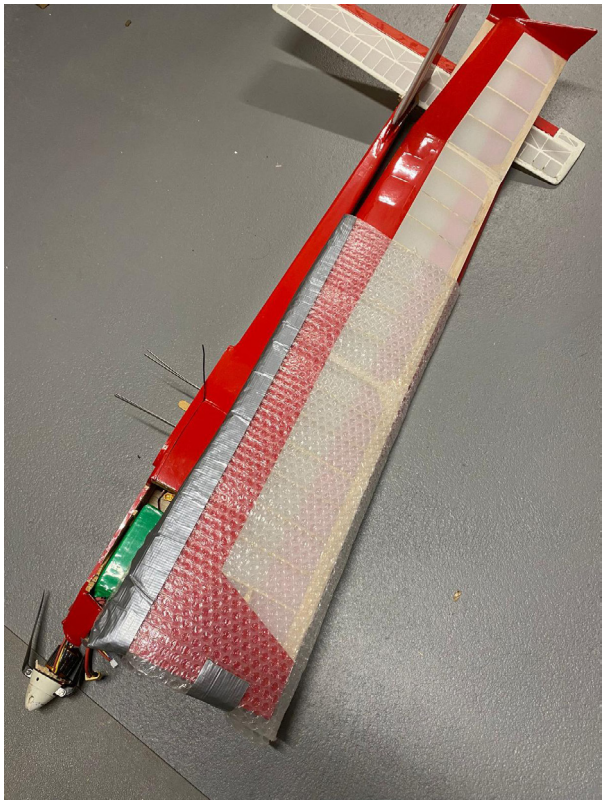
Person hit by model aircraft, motorised model aircraft, beach at Katwijk, 31 October 2021

On Sunday 31 October 2021, around 11.00 hours, a child was seriously injured in the head on the beach near Katwijk because it was hit by a model aircraft.

That day a group of six people, including two children, was on the beach south of Katwijk. One of them had a motorised model aircraft with which he wanted to make a flight on the beach. It was a self-built model aircraft with a wingspan of about 1.50 metres and a length of about 1 metre. The model aircraft had an electric motor that drove the propeller. The total weight of this model aircraft was about 2 kilograms.

Under the Model Flying Regulation, a model aircraft is an aircraft, incapable of carrying a human being, and used exclusively for aviation, recreation or sport. Given the severity of the injury and because a model aircraft is an aircraft, this occurrence is classified as an accident for which an investigation obligation applies under the Dutch Safety Board Kingdom Act.

The pilot had extensive experience in flying model aircraft. He had studied the weather forecast in advance and according to him it mentioned that the wind came from the direction between 90-120 degrees at a speed of about 15-20 kilometres per hour (km/h). Although he felt that these conditions were not favorable for a flight with this model aircraft, he still decided to perform the flight.
At first he wanted the model aircraft to take off on the open beach so as not to get into turbulence from the dunes, but in the end he chose a place near the dunes. After starting the engine, he let the aircraft take off in a southerly direction, parallel to the dunes. According to the pilot, the wind was such strong that he had difficulty controlling the model aircraft, after which he decided to land it again.



The disassembled model aircraft. (Source: the owner)

He steered the model aircraft in the direction of the sea and had it make another turn to fly in the direction of the dunes and land there, parallel to the dunes. Due to the wind, the pilot needed all the attention to fly the model aircraft. Just before landing, the pilot lost control of the model aircraft after which it made a steep dive. According to him, this was because the model aircraft ended up in a downward airflow and the power of the electric motor was insufficient to regain control over the aircraft. After losing control of the model aircraft, the propeller hit the head of one of the children.

Investigated occurrences

The statements of those involved vary on the last part of the flight. Others stated that there was a stormy westerly/ northwest wind in which the model aircraft flew from the direction of the sea, with wind at high speed towards the dunes. Because, according to these persons, the pilot focused all his attention on the control of the model aircraft before landing, he did not pay attention to where the other persons stood after which the model aircraft hit the child.

According to the observations of the Royal Dutch Meteorological Institute (KNMI), the weather conditions around the time of the accident at Katwijk were: visibility more than 10 kilometres, the wind at 10 metres altitude came from the direction 160 degrees with a velocity of 17-20 knots (31-37 km/h) with gusts up to 25 knots (46 km/h).

The accident was caused by the pilot losing control of the model aircraft. The weather report shows that the weather conditions were unsuitable for making a flight with a model aircraft. The wind velocity was too high to properly control a two-kilogram model aircraft with an electric motor. Although there are no limits to the weather conditions for flying model aircraft, the prevailing wind conditions were sufficient reason not to carry out a flight with such a model aircraft.

Classification: *Accident*
Reference: *2021121*

Loss of control after takeoff, DJI Matrice 210 V2, PH-6RM, The Hague,
12 November 2021

The accident
The crew of PH-6RM, consisting of a pilot, payload operator and observer, intended to perform an observation mission in the city center of The Hague. The flight was conducted by a state operator and performed with a DJI Matrice 210 v2 (M210), an industrial grade unmanned aircraft[11], equipped with a dual payload (camera and thermal sensor) and controlled with DJI Cendence remote controllers (primary and secondary). The total weight of the unmanned aircraft was almost 6 kg.

The takeoff location was situated on a roof terrace on the 4th floor, in between several high-rise buildings. During flight preparations, the crew calibrated the compass of the unmanned aircraft following a 'compass calibration required' warning by the DJI Pilot remote controller software application. According to the pilot, DJI Pilot indicated sufficient satellite positioning information[12] to perform the takeoff. The flight mode was set to P(ositioning)-mode.[13] After the pilot started the motors of the unmanned aircraft, he took off and intended to initiate post takeoff checks.

11 The unmanned aircraft is part of the Unmanned Aircraft System (UAS) which also includes a ground station or remote controller.
12 The DJI Pilot application shows 5 discrete levels, indicating the quality of the satellite signal based on the number of available satellites, signal strength of satellites broadcasting and horizontal positioning accuracy factor. A minimum of 3 bars is required for safe flight in P-mode, however, the manufacturer of the UAS recommends 4 or more bars.
13 In the P-mode the unmanned aircraft depends on the Global Navigation Satellite System (GNSS) and the compass to determine the reference for its movement.

Directly after takeoff, the unmanned aircraft did not respond to stick input as expected and flew uncontrollably away from the crew towards the street. Before reaching the street, the unmanned aircraft turned around and flew towards the crew. By lying down, the crew was able to avoid being hit by the unmanned aircraft. Subsequently, the unmanned aircraft gained height and crashed into the building. As it fell to the ground, the unmanned aircraft hit a crew member. The unmanned aircraft and its payload were substantially damaged. The crew member suffered minor injuries.

Weather conditions were within the unmanned aircraft's operational envelope, with a wind speed of approximately 16 knots and gusts up to 26 knots. The flight was performed in the evening, outside the Uniform Daylight Period.

Analysis
The Dutch Safety Board analysed the data recorded by the unmanned aircraft. The data showed that the altitude was consistent with the input given by the pilot. However, the roll, pitch and yaw angles of the unmanned aircraft were generally not consistent with the given input. Most notably, directly after takeoff the unmanned aircraft started oscillating in both roll and pitch without any input from the pilot. The unmanned aircraft was operated in P-mode during its flight.

Further analysis revealed that moments after the pilot lost control over the unmanned aircraft, a GNSS[14] position non-match error was reported by the system. Data showed that the number of GNSS satellites available was over 8 before takeoff, of which 5 were GPS satellites. After takeoff, the number of available GNSS satellites fluctuated between 6 and 8. During flight, the DJI Pilot app did not show a 'weak GPS signal' warning. As the number of bars indicating the GNSS signal quality in DJI Pilot was between 3 and 4, this should be sufficient for safe flight in P-mode, according to the manufacturer.[15] Given the takeoff location between buildings, it is possible that GNSS multipath error(s) occurred, however, there is no evidence that supports this hypothesis. Overall, a weak, loss of or inaccurate GNSS signal may result in a loss of control of the unmanned aircraft when flown in the P-mode.

Before the flight, a 'compass calibration required' warning was triggered by the DJI Pilot app. According to the manufacturer of the UAS, this means that a magnetic field with significant strength was detected near the unmanned aircraft. Furthermore, data showed a discrepancy of approximately 50 degrees between the yaw angle as computed by the Inertial Measurement Unit (IMU) and measured by the magnetic compass, which seems to have occurred as a result of the calibration.[16] The manufacturer of the UAS stated that such a discrepancy in yaw angle would cause deviation and drift due to the flight computer not being able to effectively control the unmanned aircraft. Possibly, the calibration of the compass or its trigger was affected by external factors, such as the electromagnetic characteristics of the building at the takeoff location. This would mean that the compass calibration would be valid at the exact takeoff location, but would become invalid after takeoff.

During the investigation, on several occasions the manufacturer was contacted by the Safety Board to provide answers to general questions about the unmanned aircraft and its subsystems. Not all requested information was made available to the investigation team in time, as a result of which some essential information required for the investigation was not available.

Conclusions
Whether the root cause of the loss of control was a weak, loss of or inaccurate GNSS signal, an erroneous compass calibration or a combination of these factors, is uncertain. Evidence seems to point to a problem with the calibration of the compass. However, this cannot be established with certainty.

Flying a UAS in built-up areas, especially with high-rise buildings, involves risks, such as loss of or weak satellite signals and external influences on the on-board systems. These factors may affect the controllability of the unmanned aircraft. Crews must be aware of the possible emergence of these factors so that timely action can be taken in the event of unexpected behavior of the unmanned aircraft. In some cases, it may be preferable to fly in A(ttitude)-mode in such environments as a safety precaution. Flying in A-mode allows the crew to effectively overcome possible GNSS issues, as in this mode GNSS information and the magnetic compass are not used for positioning.

The operator also conducted a safety investigation. Following the occurrence, the operator has issued an announcement to its staff indicating that caution is advised when buildings are used as takeoff location as there might be interference issues affecting the UAS. It is important to check whether the GNSS signal is strong at these type of locations.

Classification: *accident*
Reference: *2021124*

14 Global Navigation Satellite System (GNSS). The unmanned aircraft can use both GPS and GLONASS. According to the manufacturer of the UAS, the flight control system will integrate the information of the two systems.
15 Only in the last part of the flight, just before or during the crash against the building, the number of available satellites and the GNSS signal quality drops below the minimum level. This is probably caused by interaction with the building and/or the attitude of the unmanned aircraft.
16 The magnetic compass angle was computed from the raw compass readings. Before calibration, the difference between the IMU and compass yaw was on the order of 10 degrees and less.

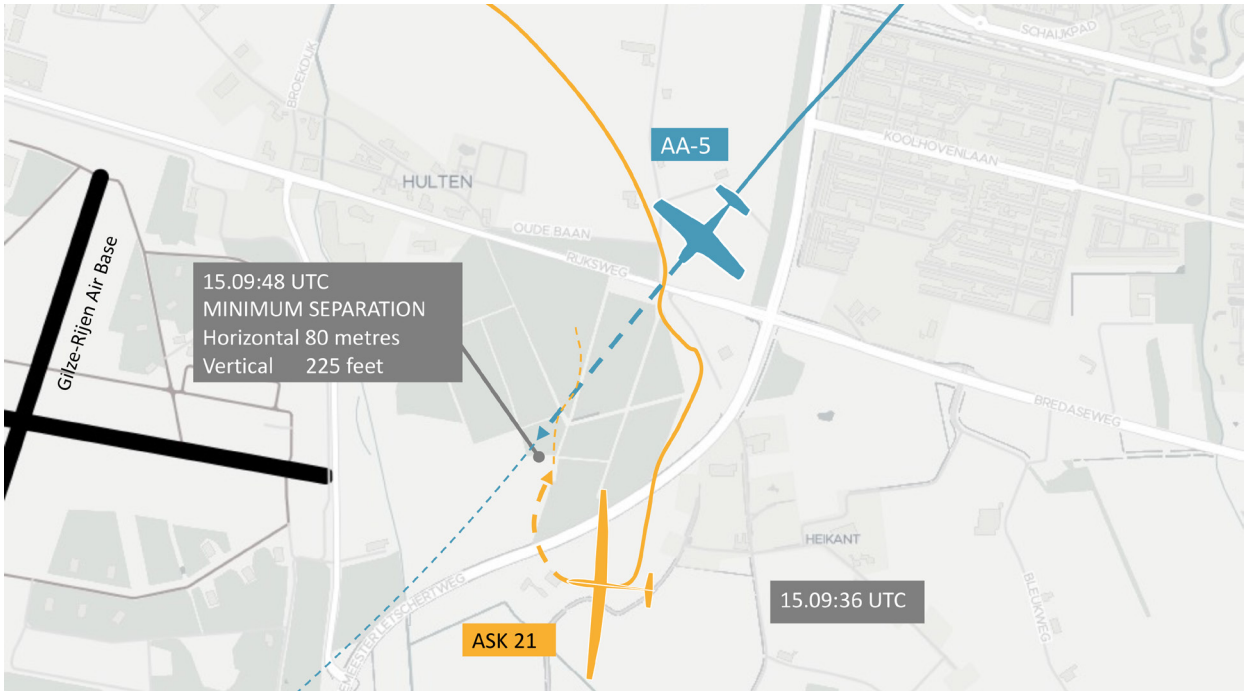
Investigated occurrences

Airprox, Grumman American AA-5, N277MW and Alexander Schleicher ASK 21, PH-1018, Gilze-Rijen Air Base, 5 March 2022

N277MW, a Grumman American AA-5, was completing a cross-country flight under visual flight rules (VFR) from Leer-Papenburg airfield in Germany to Antwerp Airport in Belgium, on Saturday 5 March 2022. The pilot of the motorised aircraft had planned his flight over Gilze-Rijen Air Base, where the gliding club was active at the time. Winching operations were being conducted up to an altitude of approx. 450 metres (1,476 feet).

The pilot contacted Dutch Mil Info, and it can be heard on the recorded radio communication that he reported that he intended to cross Gilze to the south, at an altitude of 1,000 feet. Because of other traffic, it took some time before Dutch Mil Info replied, "flight information service, QNH 1021, later on crossing Gilze is approved". The pilot took this to mean that he had received permission to cross Gilze. The pilot assumed that he had been given clearance, and that no gliding activities were taking place at Gilze, at that time. He subsequently flew over the glider circuit at Gilze-Rijen Airbase, at an altitude of approximately 1,040 feet. PH-1018, an ASK 21, was flying at that time to the east of the airbase, at an altitude of approximately 1,265 feet. According to radar data, the two aircraft approached each other closely. The minimum vertical separation between the two aircraft was approximately 225 feet, and the minimum horizontal separation approximately 80 metres.

The control zone (CTR) was not active when the AA-5 was approaching the airspace above the air base. Outside the opening hours of the CTR, this airspace is classified as a radio mandatory zone (RMZ) and adopts



The ASK 21 entered the glider circuit at 1,265 feet, while the AA-5 was crossing Gilze-Rijen Air Base at 1,040 feet. (Source: radar data Air Traffic Control the Netherlands (LVNL))

the airspace classification of the surrounding airspace. When entering an RMZ, in flight, contact must be made with the responsible air traffic control service, in this case Dutch Mil Info. The relevant radio frequency must then be constantly listened to.[17]

At the time of the occurrence, the RMZ was active. The motorised aircraft was flying at an altitude of 1040 feet in class G airspace. This is uncontrolled airspace, which may be flown in without clearance, and in which pilots are personally responsible for separation with other aircraft. In class G airspace, flight information is provided at the pilot's request (flight information service).

To reduce the risk of an airprox between a motorised aircraft and a glider above or near an aerodrome where glider activities are taking place, it is recommended to avoid these locations and their immediate vicinity, and to not fly across them at low altitude.

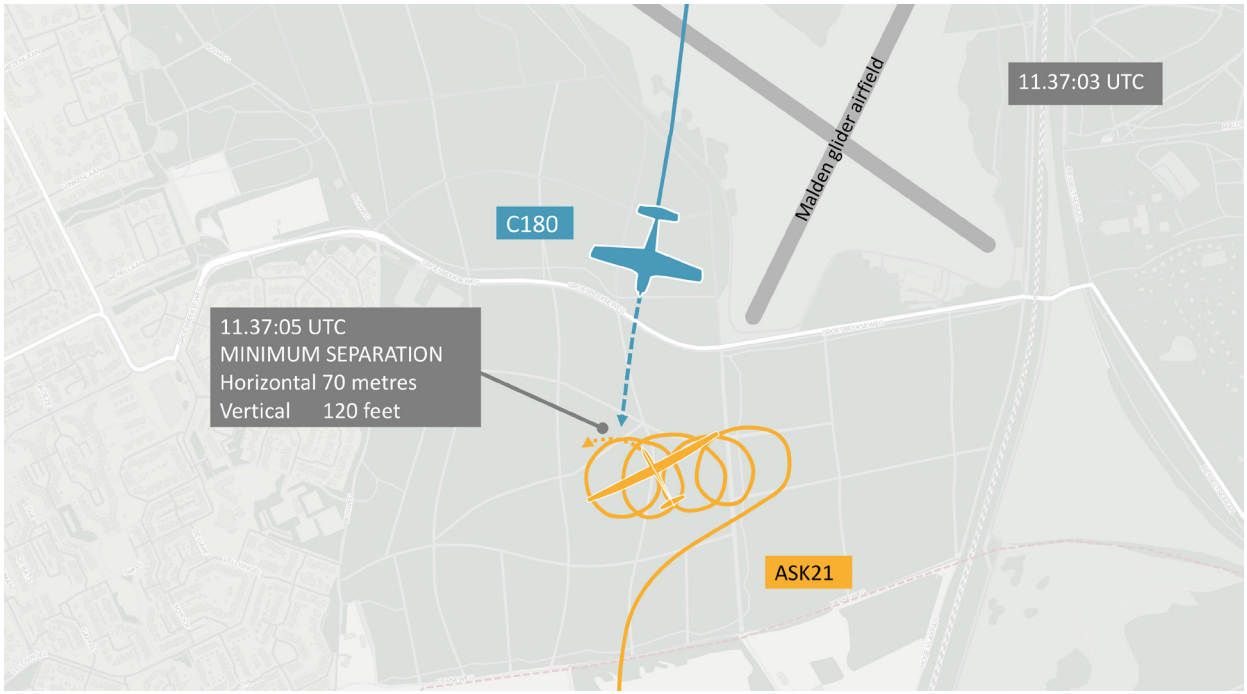
Classification: *Serious incident*
Reference: *2022013*

Airprox, Alexander Schleicher ASK 21, PH-733 and Cessna 180J, PH-SLA, Malden glider airfield, 20 April 2022

On 20 April 2022, at around 12.50 hours, PH-733, a two-seater glider of the type Alexander Schleicher ASK 21, took off from Malden glider airfield for a local fight. There were two persons on board. At around 13.37 hours, the ASK 21 entered a thermal, and had completed a number of circular turns, rising to around 2,000 feet, when the FLARM warning system[18] generated a warning. FLARM generates a warning signal when another aircraft is in the vicinity and there is a risk of collision.

Initially, the pilots observed no other aircraft approaching, but shortly afterwards they suddenly saw a motorised aircraft passing above them, at high speed. The aircraft was flying from left to right over their aircraft, at a vertical separation as estimated by the pilots of less than 20 metres. Because of the speed of the motorised aircraft, the pilots were unable to read the registration.

The pilot of PH-SLA, a single-engined aircraft of the type Cessna 180J Skywagon, had taken off on that day at around 13.30 hours from Teuge International Airport, to complete a photo flight.



Reconstruction of the airprox based on the FLARM data. (Source: radar data LVNL)

17 EASA, *Easy Access Rules for Standardised European Rules of the Air (SERA), SERA.6005*, March 2022.

18 FLARM is an airborne collision avoidance system for gliders.

Investigated occurrences

The pilot was in possession of an Airline Transport Pilots Licence (ATPL) and had more than 20,000 hours flying experience. The area to be photographed was in the local controlled traffic region of the air bases Volkel, Gilze-Rijen and Eindhoven. En route to this area, the pilot overflew the Terlet glider airfield at an altitude of approximately 3,000 feet, and continued in a southerly direction. For operational reasons, he decided to fly over the Malden glider airfield. As he approached this glider airfield, the pilot had already started his descent to the flying altitude for the photo flight. He saw the glider airfield, and assessed the situation around the field. He stated that he observed no gliders in the air, and saw no activities on the ground which suggested a winch or aerotow was being prepared.

In his memory, he was flying at an altitude of approximately 2,000 feet over the glider airfield, and was continuing his flight in a southerly direction. He stated that he had not observed the ASK 21. PH-SLA is also equipped with a warning system that issues a warning if any other air traffic is in the vicinity. The pilot stated that this system had not generated a warning of a potential collision risk.

Using data from the FLARM, the flight paths of the ASK 21 and the Cessna 180J were analysed. At the point where the two aircraft came closest, the separation between them was approximately 70 metres horizontal and 120 feet (approximately 37 metres) vertical.

According to information from the nearby Volkel Airbase, at the time of the occurrence the weather was as follows: wind from a direction of 060 degrees with a force of 7 knots, variable between 020 and 130 degrees, visibility more than 10 kilometres, temperature 16 °C, atmospheric pressure 1016 HPa.

The airspace above 1,500 feet around Malden glider airfield is class E airspace. In this type of airspace, no air traffic control services are provided to VFR traffic, and pilots themselves are personally responsible for separation with other aircraft. They must constantly remain vigilant for other air traffic. However, even despite careful lookout, it is possible to fail to observe another aircraft, as in this case. Warning systems for other air traffic can help to notify the presence of such air traffic on time, but not all aircraft are equipped with these systems.

The statement of the experienced pilot of the Cessna 180J revealed that en route to his target, he had deliberately crossed two glider airfields, Terlet and Malden. A concentration of gliders can be expected around glider airfields, in particular in good weather. Although flying across glider airfields is not forbidden, it is recommended that these locations and their immediate vicinity be avoided wherever possible (as previously stated in this report).

Classification: *Serious incident*
Reference: *2022029*

Loss of control after interrupted winch launch, Alexander Schleicher ASW 28, PH-1643, Terlet glider airfield,
5 May 2022

The course of the flight
During their annual glider camp at Terlet glider airfield, the members of a gliding club used the winch belonging to another club. Members of this club operated the winch.

On Thursday 5 May 2022, at around 16.35 hours, the pilot of PH-1643, a single-seater glider of the type ASW 28, was preparing for his second takeoff of the day in this aircraft, from Runway 22L, by means of a winch launch. The previous flight had been completed without problems.

After the pilot had completed his cockpit checks, the winch cable was attached to the glider. The pilot indicated that he was ready for takeoff, at which point the winching procedure was started. After the glider came clear of the ground, the pilot gradually increased the aircraft's pitch attitude. Shortly afterwards, he noted that the winch was no longer applying any pulling force, and that the speed of the glider was decreasing. In response, he lowered the pitch attitude of the aircraft. This is a signal to the winch operator that the winch speed is too low, and that more power should be applied. However, according to the pilot, nothing happened. The pilot then lowered the nose of the glider to horizontal, at which point he observed that the winch cable was hanging loosely. At that point he realized that something had gone wrong, and he disconnected the cable. At that moment, the glider was flying at an altitude of between 25 and 30 metres. According to the pilot, the air speed of the glider had fallen to around 35 km/hour, while according to him the aircraft should normally have been travelling at 95 km/hour. He lowered the pitch attitude of the glider but due to the low altitude at which the glider was flying, he was cautious about dipping the nose too far. He subsequently attempted to lower the pitch attitude in stages. The speed increased slightly, but at a certain point the glider slipped away towards its left wing, the nose adopted a downward pitch, and initiated a turn. The glider then hit the ground first with its left wing and then the nose. The pilot was injured during the accident, and the glider suffered serious damage.

Film footage of the accident is available. From a distance, this footage shows that the ASW 28 initiated its takeoff run at 16.36:48 hours. Two seconds later, the glider left the ground and started its ascent. At 16.36:54 hours, the nose of the glider was dipped to horizontal. Almost immediately the nose dipped further, and the glider slipped towards one wing. At 16.36:59 hours, the glider hit the ground.

The pilot and the winch operator
The pilot had seven years' glider experience during which period he had completed 419 takeoffs and more than 55 flying hours. At the start of the 2022 season, in March, he had been checked out by an instructor. Following this check flight, which was completed successfully, he had completed ten takeoffs prior to the accident in two different types of single-seater gliders belonging to the club: an ASK 23B and an ASW 28. In his own words, during his flying training, he had been taught to always be prepared for a broken cable or winch failure, but had never actually practised these occurrences.

The winch operator had been employed as winch operator by the gliding club, for eighteen months. Because the winch in use belonged to a different club, he had been checked out on the winch during day one of the camp week. According to the winch operator, this winch had less power than the winch at his own club, but immediately prior to the occurrence he had winch launched twelve other gliders without problems.

The takeoff procedure
The takeoff procedure was different from the standard procedure at the club. Unlike at their own club (where walkie-talkies are used to indicate which type of glider is about to take off so that the winch operator knows how much power to apply), here there was no verbal contact between the winch operator and the takeoff location; instead only a light signal was used. As a consequence, in the initial phase of each flight, the winch operators were unaware whether they were winch launching a (lighter) single seater or a (heavier) two seater. Because in the words of the operator, the winch in use delivered less power than the winch normally used by the club, all gliders were initially winched at full power.

The crashed ASW 28

Due to the separation between the winch and the takeoff location and due to a slight curvature in the runway, the winch operators were only able to actually observe the glider in question after it had left the ground. If it turned out to be a single seater, the power was subsequently manually reduced. In the case of a two seater, winching was continued at full power.

The winch operator stated that takeoff of the ASW 28 took place as normal: after receiving the light signal, he pulled the winch cable taut, and then selected full power. When he caught sight of the aircraft, he saw that it was a single seater, at which point he reduced power to half. According to the winch operator, however, the winch power dropped off entirely. He then pushed the throttle into the full-power position to once again select full power but according to his statement, the winch motor failed to respond. At that moment, he decided to fully cut back power and to apply the brake to give the pilot the opportunity to correct his aircraft's attitude. He saw that the nose of the glider continued to point upwards, at which point the glider slipped across its left wing and crashed.

Investigated occurrences

The winch
The winch used is of the make MEL and delivers a power output of 160 hp. At the start of the day, the winch had undergone its daily inspection and was found to be in good order. Following the occurrence, the functioning of the winch was tested, in the presence of investigators of the Dutch Safety Board. No non-conformities were observed. The next day, the winch was thoroughly inspected and tested by winch engineers. Here, too, no non-conformities or malfunctions were detected. Following subsequent questioning, it emerged that the winch at the winch operator's own gliding club was of the same type, and according to the type plate also delivered a maximum power output of 160 hp. It is unclear on what basis the winch operator mentioned a difference in power between this winch and the club's own winch.

Analysis
The accident was initiated by the loss of power from the winch. Whether this was the result of a technical malfunction or human error never became clear. Although neither before nor after the accident any non-conformities or malfunctions were discovered in the winch, it is not possible to exclude a technical cause.
Given the assumed lower power of the winch, and the inability to communicate between winch operator and takeoff location, a procedure was selected whereby each takeoff was started at full power, a setting that was only adjusted once the winch operator could see that the cable was attached to a single seater. This procedure introduced an additional moment at which, in a critical flight phase, too much or too little power could be applied, unintentionally.

The pilot stated that the winch speed was higher than he was used to. In principle, at his own club, takeoffs were initiated more slowly, before more power was subsequently applied. In this case, in his judgement, the winch launch was initiated at full power. In his memory, the first takeoff of the day had been calmer. He stated that he was surprised by the loss of power during the second takeoff. The available film footage reveals that the pilot had lowered the nose of the glider from ascending attitude to a more downward attitude, but not to a sufficient extent, as a result of which the airspeed did not increase sufficiently, and fell below stall speed. Almost immediately thereafter, the glider slipped across one wing. Given the low altitude, by that time the pilot was no longer able to recover the situation and the accident proved unavoidable.

During glider training, pilots are taught to always be prepared for a broken cable or winch failure. Irrespective of the altitude, in such a situation the following procedure must be implemented: Nose down, Detach, Air brakes closed/locked, Check speed (in Dutch BOKS procedure). Effectively, this means that the pilot should move the control stick forwards, to lower the pitch attitude of the glider below horizontal in order to achieve an appropriate safe (landing) speed. In the event of a cable break or winch failure at low altitude, the pilot then lands the glider straight ahead.

With regard to the absence of verbal communication between the takeoff location and the winch, it would be preferable for the Royal Netherlands Aeronautical Association (KNVvL) to specify in its guidelines that at all times a reliable means of verbal communication should be present between the takeoff location and the winch operator.

Classification: *Accident*
Reference: *2022032*

Runway excursion, Cessna 172S, D-EWIT, Rotterdam The Hague Airport,
14 May 2022

The pilot was conducting a local flight under visual flight rules from Rotterdam The Hague Airport, in his Cessna 172S. He was the only occupant. During the approach to Runway 24, the wind was blowing from the west - from the right-hand side - at a speed of 8 knots. Just prior to and during the landing, the pilot experienced gusting winds; this forced him to make steering corrections, to keep the aircraft on the centreline of the runway. As a result, he lost control of the aircraft; the left-hand wheel came off the runway, and the left wing tip touched the ground. The Cessna eventually returned to the runway. The pilot was unharmed. The aircraft suffered damage to the left wing.

The pilot had a total flying experience of 768 hours, of which 570 hours on the type in question.

Damage to the left wing. (Source: Airport Operations, Rotterdam The Hague Airport)

Classification: *Accident*
Reference: *2022043*

Airprox, Rolladen-Schneider Flugzeugbau GmbH LS 3, PH-1567 and Socata TB-20, OO-KNK, near Soesterberg glider airfield, 22 May 2022

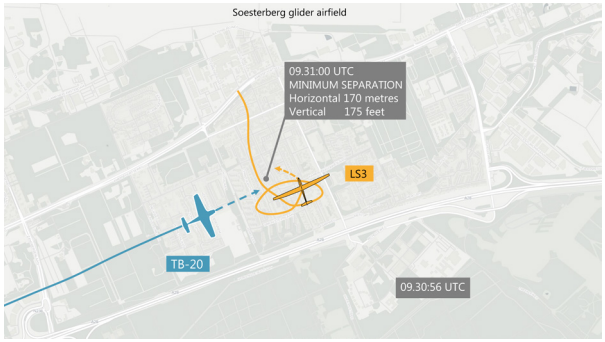
The motorised aircraft, a TB-20, was conducting a flight under visual flight rules (VFR) from Ostend-Bruges International Airport in Belgium to International Airport Teuge. The pilot was the only occupant. Visibility was good, with light cloud. At 11.26 hours, approximately 20 km southwest of Soesterberg, the pilot made contact with Dutch Mil, and was informed that he would be provided with flight information service.[19] At around the same time, two gliders, flying in close proximity, were gaining altitude in a thermal at an altitude of between 1,640 and 1,970 feet (500 and 600 metres) near Soesaterberg glider airfield. Several minutes later, the motorised aircraft passed beneath the two gliders and continued its flight in a northeasterly direction.

The pilot of the TB-20 had observed neither glider. Both glider pilots saw the TB-20, but at such a late point that neither took any evasive action. The aircraft were in controlled class E airspace, in which pilots (conducting VFR flights) are personally responsible for the separation with other VFR traffic. In as much as practically possible for Dutch Mil, in this airspace, VFR flights receive traffic information. If aircraft of different categories approach each other on converging courses, as was the case here, motorised aircraft must give way to gliders. Ten minutes later, the pilot of the TB-20 requested permission from Dutch Mil to leave the frequency, in order to contact Teuge. Permission was granted.

19 Flight information service involves the provision of information during a flight to ensure flight safety and efficiency. This includes information about weather phenomena along the flight route, information about changes to the usability of navigation aids and changes to the status of aerodromes and facilities. No air traffic control is provided.

The occurrence was reported by the pilot of the LS3. Radar data revealed that his glider and the TB-20 passed each other with a minimum separation of 175 feet vertical and 170 metres horizontal.

The pilot of the TB-20 declared that he was aware of glider activities near Soesterberg, and had taken account of this fact in his flight planning. He stated that he had closely monitored air traffic near Soesterberg.



The airprox south of Soesterberg glider airfield. (Source: radar data LVNL)

Classification: *Serious Iicident*
Reference: *2022052*

Bounched landing, Van's Aircraft, Inc. RV-9A, PH-RVN, Hoogeveen Airport, 17 June 2022

At approximately 21.45 hours, PH-RVN, an RV-9A self-built aircraft, was returning to Hoogeveen airfield, from a cross-country flight. On board were a pilot and a passenger. Air traffic at Hoogeveen airfield was relatively heavy, due to an event taking place until the end of the daylight period. Visibility was more than 10 kilometres, with no cloud cover and 4 knots of wind from a southerly direction.

When the RV-9A entered the right-hand circuit for Runway 27, the pilot reported on the frequency of Hoogeveen Radio that he was on the downwind leg and subsequently on right base, with the intention of completing a full stop landing. During final, he once again reported his position and intentions via the radio. According to the pilot, his radio transmissions were received and answered by airport operations. During short final, the pilot once again reported his position. He then observed another aircraft joining Runway 27, to start his takeoff run. The pilot indicated his surprise at this turn of events. According to his statement it took some time before the aircraft started its takeoff run. He considered conducting a go-around, but decided not to do so. In his judgment, in that case, his aircraft would have come too close to the glider airfield, located on the southern side of the runway, or his aircraft would have come too close to the aircraft that had just started its takeoff run. The pilot therefore continued his approach and landed his RV-9A on Runway 27.

After first touching the ground, his aircraft bounced on two occasions. It then tipped forwards onto its nose, briefly remaining vertical, before falling back onto its main wheels. The aircraft suffered damage to the propeller, the spinner and the nosewheel. The pilot and passenger remained unharmed.

It is good to be aware that a situation can always arise that makes it necessary to abort the final approach. In such a case, the aircraft should switch to an ascending flight, allowing a safe return to the air traffic circuit.

Investigated occurrences

As a rule, it is difficult to correct a bounced landing, because the bounces succeed each other so rapidly. In this case, it took four seconds from the moment of touchdown to the point at which the aircraft became stationary, on its nose. The best remedy for any bounced landing is to initiate a go-around immediately following the first bounce.

The damaged aircraft (Source: aeroplane owner)

Classification: *Accident*
Reference: *2022073*

Unmanned aircraft during balloon event, Hardenberg, 24 June 2022

During the launch of hot-air balloons at a balloon event at Hardenberg, multiple unmanned aircraft (drones) were seen in the vicinity of and above the launch field, in airspace class G. These unmanned aircraft were not known to the event organisation. The pilot of a balloon reported that at a height of approximately 800 feet an unmanned aircraft was flying in close proximity of his balloon and flew under the basket at a distance estimated at two metres. The unmanned aircraft and their pilots have not been identified. The event organisation requested the UAS[20]-pilots via the public address system to clear the airspace around the launch field. This did not have any effect. The balloon event was attended by a large number of participants and spectators on the ground.

An UAS may under certain (European) rules operate in the same airspace as manned aircraft. The SERA-regulation[21] prescribes that an aircraft – this includes unmanned aircraft – shall not be operated in such proximity to other aircraft as to create a collision hazard. In addition, restrictions apply to UAS.[22] For example, an UAS of the 'open category'[23] may not be operated higher than 120 metres above the surface and the UAS-pilot must keep the unmanned aircraft at a distance such that he can clearly see it.

20 An Unmanned Aircraft System (UAS) typically consists of a ground station or remote controller and an unmanned aircraft.
21 Standardised European Rules of the Air.
22 As of 1 January 2021, civil UAS operate under European Regulations (Regulations 2019/947 and 2019/945).
23 These are unmanned aircraft which weigh less than 25 kg and with which flights are carried out with low risk. For more information on the different categories, see https://www.easa.europa.eu/domains/civil-drones and https://www.ilent.nl/onderwerpen/drones.

In addition, it may not overfly assemblies of people and avoid as much as possible overflying uninvolved persons. UAS-pilots should be aware of safety risks and also take unexpected situations into account. Situations may arise where the UAS-pilot no longer has control over the unmanned aircraft. This may occur during automatically performed emergency procedures (such as return-to-home) as a result of the loss of *command-and-control* connection or the failure of one or more on board systems.

Unmanned aircraft shall remain at large distance from such events and other aircraft, in this case hot-air balloons with passengers on board, unless they have been specially hired at the request of the event organisation and arrangements have been made. During the organisation of an aviation event or display, specific attention can be given to potential measures to manage risks posed by UAS. The event organisation can make a request for temporary airspace restrictions. It is of importance to explicitly communicate such restrictions, rules of conduct or arrangements prior to and during the event, so that this information reaches the UAS-pilots. The event organiser of the balloon event indicated that clear communication regarding unmanned aircraft at another balloon event in July 2021 had a positive effect.

Classification: *Accident*
Reference: *2022075*

Emergency landing after engine failure, Supermarine Aircraft LLC Spitfire Mk 26B, PH-PSF, Hilversum Airfield, 18 August 2022

The self-built aircraft, a Spitfire replica, was completing a cross-country flight from Teuge International Airport to Hilversum Airfield. On board were a pilot and a passenger. At Hilversum Airfield, the captain completed a go-around from Runway 36, at which point the right main landing gear was not fully retracted. While the pilot and the passenger attempted to investigate the problem during the downwind leg, the engine management system indicated that there was a problem with the engine. During the downwind leg, just before completing the turn to base, the engine started to run irregularly and pale blue smoke became visible around the exhaust outlets on both sides of the aircraft's nose.

The Spitfire in the cornfield (Source: Pilot)

The pilot issued an emergency call, and succeeded in extending the right-hand landing gear. Shortly afterwards, the engine cut out completely. The Spitfire completed an emergency landing in the cornfield before the beginning of Runway 36. Both occupants remained unharmed. The aircraft was badly damaged.

After the Spitfire was recovered, a hole was discovered in both sides of the engine wall, and a piston rod was found in five pieces, at the bottom of the engine compartment. The Dutch Safety Board has chosen not to investigate the engine failure further.

Classification: *Accident*
Reference: *2022118*

The Dutch Safety Board in three questions

1

What does the Dutch Safety Board do?

Living safely, working safely, safety. It seems obvious, but safety cannot be guaranteed. Despite allknowledge and technology, serious accidents happen and disasters sometimes occur. By carrying out investigations and drawing lessons from them, safety can be improved. In the Netherlands the Dutch Safety Board investigates incidents, safety issues and unsafe situations which develop gradually. The objective of these investigations is to improve safety, to learn and to issue recommendations to parties involved.

2

What is the Dutch Safety Board?

The Dutch Safety Board is independent of the Dutch government and other parties and decides for itself which occurences and topics will be investigated.

The Dutch Safety Board is entitled to carry out investigations in virtually all areas. In addition to incidents in aviation, on the railways, in shipping and in the (petro-)chemical industry, the Board also investigates occurrences in the construction sector and healthcare, for example, as wel as military incidents involving the armed forces.

3

Who works at the Dutch Safety Board?

The Board consists of permanent board members; the vice chairperson is Stavros Zouridis. The board members are the public face of the Dutch Safety Board. They have extensive knowledge of safety issues. They also have extensive administrative and social experience in various roles. For specialist knowledge, the Board members can enlist the assistance of the associate members of the Board.

The Safety Board's bureau has around 70 staff, two-thirds of whom are investigators.

Visit the website for more information www.safetyboard.nl.

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November 2022

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

Source photos cover:
Photo 1: Airport Operations, Breda International Airport.