



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 to remove these. The Board's investigations explicitly exclude any culpability or liability aspects.

Quarterly Aviation Report

Januari - March 2020



In the first quarter of 2020, everyday life for many practically came to a standstill. Aviation is no exception, and as yet there is no prospect of an end to the crisis. As a consequence of the COVID-19 outbreak, the number of flight movements worldwide has fallen dramatically in the past quarter. This is clearly reflected in commercial air traffic at Amsterdam Airport Schiphol, in addition to which many activities at regional airports and in General Aviation have stagnated, at the moment of writing (early May).

As a result, the number of occurrences has also fallen. In the past quarter, a single accident was reported to the Dutch Safety Board, into which a limited investigation was carried out. The accident involved a small aircraft and resulted only in slight material damage (see page 7).

The COVID-19 outbreak has also had consequences for the work of the Dutch Safety Board. Already launched investigations are being continued unabated, but mainly from home. Nonetheless, we have succeeded in publishing two aviation reports. Moreover, foreign investigation authorities launched three investigations and published three investigation reports into occurrences involving Dutch manufactured aircraft. This quarterly report contains further details of these investigations.

Jeroen Dijsselbloem
Chairman of the Dutch Safety Board



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

Burst tyres right-hand main landing gear, Boeing 737-400, Budapest Ferenc Liszt International Airport (Hungary), 11 July 2019

During take-off from Budapest airport, a tyre of the right-hand main landing gear burst. The crew was duly warned by air traffic control. The aircraft subsequently returned to the airport. During the landing, a second tyre on the same landing gear also burst.

The Hungarian Transportation Safety Bureau has launched an investigation into this occurrence, which was reported to the Dutch Safety Board in March 2020. The Dutch Safety Board has offered its assistance because aircraft tyres are re-treaded in the Netherlands.

Classification: Serious incident
Reference: 2019106

Runway excursion, Fokker F28 Mk 0100, Newman Airport (Australia), 9 January 2020

Following its flight from Perth, the Fokker 100 landed at Newman Airport in Western Australia. The aircraft came to a standstill approximately 100 metres beyond the end of the runway. There were no injuries; the aircraft suffered no damage.

The Australian Transport Safety Bureau (ATSB) has launched an investigation into the occurrence. The Dutch Safety Board has offered its assistance.

Classification: Incident
Reference: 2020001



Archive photograph Fokker 100. (Source: W. Kaiser)

Loss of cabin pressure, Fokker F28 Mk 0100, en route (Australia),

12 January 2020

After reaching cruising altitude, the Fokker 100 experienced cabin decompression. In response, the crew initiated an emergency descent to an altitude of 9,000 feet. During this descent, smoke was observed in the cabin. There were no injuries. The aircraft suffered no damage and completed a safe landing. A technical investigation revealed a faulty cabin pressure regulator unit.

Because the cause was identified and the occurrence did not lead to any other operational disruptions, according to the Australian Transport Safety Board (ATSB) there were no further lessons to be learned from this occurrence. The ATSB undertook no further investigation.

Classification: Serious incident

Reference: 2020003

Loss of cabin pressure, Fokker F28 Mk 0100, en route (Australia),

18 March 2020

In flight, the Fokker 100 experienced a loss of cabin pressure. As a result, oxygen masks were presented and the crew initiated a descent from FL300. The aircraft, with 48 occupants, suffered no damage and completed a safe landing. All occupants remained unharmed.

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

Classificatie: Ongeval

Referentie: 2020015

Published reports

Runway excursion during crosswind landing, Reims aviation F172N, PH-EAM, Lelystad Airport, 7 April 2018

The pilot and his passenger in a Reims Aviation F172N, registered as PH-EAM, flew from Central Zeeland Airport to Lelystad Airport. During a crosswind landing the pilot lost control over the aircraft, whereupon it veered off to the left leaving the paved runway and turning over its nose. It came to a stop in an inverted position without injuries to the occupants. The nose wheel strut was broken, one propeller blade was bent and the wings of the aircraft were damaged.

The pilot lost control, because he did not apply the proper technique for a crosswind landing. Consequently, during landing roll out the left main wheel came off the runway whilst the remaining wheels no longer aligned with the direction of movement. The investigation revealed that the pilot experienced a significantly stronger crosswind than he had anticipated.

The Dutch Safety Board published the [report](#) on its website on 25 February 2020.



PH-EAM after the runway excursion

Runway excursion after loss of thrust at low speed, Boeing 747-400 ERF, TC-ACR, Maastricht Aachen Airport, 11 November 2017

The Boeing 747-400 ERF was scheduled to make a cargo flight from Maastricht Aachen Airport in the Netherlands to King Abdulaziz International Airport in Jeddah. The captain, who was pilot flying, taxied to Runway 21 and initiated a rolling take-off. He advanced the thrust levers and, when the engines had stabilised, he pushed the TO/GA switches, causing the engines to accelerate to the selected take-off thrust. The aircraft had accelerated to approximately 30 knots when a bang sounded and the outboard engine on the right side (engine #4) suddenly lost power. The aircraft veered to the right due to the resultant asymmetric thrust. The captain did not hear the bang and was surprised by the change of direction.

Attempts to steer the aircraft back to the centreline by means of nose wheel steering and differential braking, were unsuccessful. It veered off the runway and continued on into the soft ground on the right-hand side of the runway where it came to a standstill. None of the crew was injured. The aircraft sustained substantial damage.

The only way to arrest a deviation resulting from asymmetric thrust below the speed at which the rudder becomes effective, is to promptly retard the thrust levers to idle. That has not happened in this occurrence; it took about eight seconds for the thrust levers to be retarded. The crew deviated from standard procedures. This was probably caused by the 'startle effect' on the crew and the use of noise cancelling headsets.

The loss of engine thrust was caused by a compressor stall. The cause of the compressor stall has not been extensively investigated.

The Dutch Safety Board published the [report](#) on its website on 16 March 2020.



The Boeing 747-400 after the runway excursion. (Source: Dutch Aviation Police)

Reports published by foreign investigation authorities

Loss of control, Fokker F27 Mk 050, 5Y-CET, Nairobi (Kenya), 2 July 2014

The Fokker 50, with four occupants, was completing a night-time cargo flight under instrument meteorological conditions. Shortly following take-off from runway 06 at Jomo Kenyatta International Airport, the aircraft crashed onto a building. The occupants did not survive the accident. The aircraft was completely destroyed.

The probable cause of the accident was the decision by the crew to undertake the flight with an already known mechanical problem, and subsequently to not abort the take-off after 27 warnings were sounded in the cockpit.

The Kenyan authorities (Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works) published their [report](#) on 22 January 2020.

Belly landing, Fokker F28 Mk 0100, EP-IDG, Mehrabad International Airport, Tehran (Islamic Republic of Iran), 19 March 2019

The Fokker 100 with 33 occupants was completing a domestic flight from Qeshm Airport to Mehrabad Airport. On its final approach to Mehrabad Airport, the crew experienced a problem with hydraulic system 1. The main landing gear could not be lowered. The crew landed the aircraft with the nose gear down only. The aircraft suffered damage.

The accident occurred as a consequence of a combination of defects in the hydraulic system and in the system for manually lowering the landing gear. Contributing factors included failure to follow procedures and ineffective maintenance.

The Iranian Aircraft Accident Investigation Board published its [report](#) on 15 March 2020.

Problems with landing gear, Fokker F28 Mk 0100, EP-ATG, close to Ilam airport (Islamic Republic of Iran), 22 March 2019

During final approach to Ilam airport, the landing gear of the Fokker 100 could not be lowered due to technical problems. The crew attempted to once again raise the landing gear before attempting to relower it. Only the left-hand main landing gear and nose wheel could be lowered. The captain eventually decided to return to the departure airport. The crew made a further attempt to lower the landing gear, which was subsequently fully lowered and locked. The aircraft made a safe landing.

Investigations revealed that a component of the right-hand main landing gear had failed as a consequence of fouling of the hydraulic system.

The Iranian Aircraft Accident Investigation Board published its [report](#) on 3 March 2020.

Occurrences that have not been investigated extensively

Clearance for take-off on occupied runway, Embraer ERJ 190-100 STD, PH-EXV, Boeing 737-800, PH-BXI, Amsterdam Airport Schiphol, 27 July 2018

An Embraer ERJ 190-100 STD (hereinafter: E190) stationary at the start of runway 18C was given take-off clearance while a Boeing 737-800 (hereinafter: B737) had also been given clearance to line up for an intersection take-off on the same runway, via high speed exit W4. After hearing the take-off clearance issued to the E190, the crew of the B737 stopped past the hold short line and reported via the radio that they were located 'on the runway'. The runway controller then also issued a take-off clearance to the B737. The crew of the E190 had started the take-off roll when they saw that the B737 was clear of the runway, but broke off their take-off when they heard that the B737 had also been given clearance to take off. Shortly afterwards, the Runway Incursion Alerting System Schiphol (RIASS) sounded a warning in the air traffic control tower and the runway controller withdrew the clearance to the E190. The E190 passed the B737 that was stood stationary at



Section of runway 18C with intersections and position of the B737 during the passage of the E190

the boundary line of the intersection and the runway, at a speed of approximately 85 knots and a separation of approximately 19 metres.

The take-off clearance to the E190 resulted in a potential (collision) hazardous situation because both aircraft – due to their different start positions – were simultaneously given authorized access to the same section of the runway, where high-energy aircraft movements take place. In this situation, the RIASS was revealed to not be an effective safety barrier; the system in fact only generated an alarm after the E190 had already started to decelerate, on its

own initiative. The fact that both crews involved were communicating on the same radio frequency, and were able to see each other were effective safety barriers.

Use of intersection starts

Previous investigations have shown that the use of intersection starts can engender increased risks. These risks are further increased by using a (non-right-angled) high speed exit as an access to the runway, a situation which is advised against, internationally.¹ As a consequence, once they have passed the hold short line approaching the runway, the aircraft crew experience difficulty in seeing other approaching traffic taking off from the start of the runway.

Workload runway controller

At the moment of the occurrence, the runway controller was supervising three runways: runways 18C and 09 which were in use for aircraft taking off, and runway 22 in use for aircraft both taking off and landing. Runway 18C is less often used for departing traffic, features non-standard exit and entrance numbers and also employs non-standard names for standard departure routes. The ISMS report² concluded that the use of runway 18C as a runway for departing traffic, in combination with simultaneous use of other runways, can be referred to as an operation with increased complexity. The runway controller also increased his own workload by allowing the ground controller to offer the B737 an intersection start, rather than instructing the B737 to line up behind the E190.

Earlier in his shift, the runway controller had been involved in two other occurrences. Approximately 23 minutes before the occurrence, a light aircraft crossing the airport in the direction of the coast failed to follow his instructions. As a consequence, for some time, there was a risk to traffic taking off from runway 18C. The runway controller said that he had been shocked by this occurrence but

1 Dutch Safety Board, Schiphol air traffic safety (2017), page 56. See: <https://www.onderzoeksraad.nl/en/page/4247/veiligheid-vliegverkeer-luchthaven-schiphol>

2 Integral Safety Management System: a collaboration between Royal Schiphol Group, Air Traffic Control the Netherlands, and airlines, handlers and refuelling services at Schiphol, see: <https://integralsafetyschiphol.nl/> The affected sector parties jointly investigated this incident within the ISMS system.

after consulting with his supervisor stated he was able to continue his shift. Approximately 4 minutes before the occurrence, the runway controller also authorized an aircraft to taxi onto runway 18C via intersection W4, despite the fact that 15 seconds previously, he had issued clearance to another aircraft to take off on the same runway. Immediately after the aircraft crew read back the clearance to taxi, the runway controller withdrew the take-off clearance.

Air Traffic Control the Netherlands has no written rules on whether or not to permit the continuation of work following incidents. The possibility cannot be excluded that these events did have some effect on the mental resilience of the runway controller at the moment of the investigated incident.

Conclusion

In the past, the Dutch Safety Board has concluded that safety risks can arise at Schiphol as a result of choices that result in complex handling of air traffic.³ An example of such a choice is the offering of intersection starts at Schiphol, as in this case. The Safety Board has expressed appreciation for the extensive report drawn up by the sector within the ISMS system into this occurrence and broadly supports the conclusions of that report. In line with the conclusions of the ISMS report, the Safety Board believes that attention for previous incidents involving traffic controllers during their shift and continuing work following such occurrences is appropriate. Moreover, the Safety Board calls for attention for the relationship between this occurrence and the issuing in practice of intersection starts to air traffic at Schiphol.

Classification: Serious incident

Reference: 2018077

Broken nose wheel, Blackshape Prime BS100, PH-4N3, Lelystad Airport, 5 March 2020

The single-engined microlight aeroplane (MLA) completed a landing on runway 05 at Lelystad Airport at around 16.25 hours. Following landing, the nose wheel suffered a flat tyre causing the wheel axle to come loose and the wheel to become detached from the landing gear leg. The landing gear leg of the aircraft then dragged over the asphalt of the runway, before the aircraft eventually coming to a standstill resting on the leg. The two occupants were unharmed. The landing gear leg and propeller of the aircraft were seriously damaged. The runway surface was also damaged by the drag marks of the landing gear leg.

The Dutch Safety Board requested and studied information about this incident, but given the restricted consequences of the incident has carried out no further investigation.



The Blackshape after the landing. (Source: Lelystad Airport)

Classification: Accident

Reference: 2020014

³ Dutch Safety Board, Schiphol air traffic safety (2017), page 130. See: <https://www.onderzoeksraad.nl/en/page/4247/veiligheid-vliegverkeer-luchthaven-schiphol>

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 all knowledge 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 occurrences 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 well as military incidents involving the armed forces.

3

Who works at the Dutch Safety Board?

The Board consists of three permanent board members under the chairmanship of Jeroen Dijsselbloem. 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. 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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Colofon

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.

Source photo frontpage:
Photo 2: Dutch Aviation Police
Photo 3: Lelystad Airport