

Safety Investigation Report

Ref. AAIU-2019-01-29-01

Issue date: 11 March 2020

Status: Final

About this report

As per Annex 13 and EU regulation EU 996/2010, each safety investigation shall be concluded with a report in a form appropriate to the type and seriousness of the accident and serious incident. For this occurrence, a limited-scope, fact-gathering investigation and analysis was conducted in order to produce a short summary report.

It is not the purpose of the Air Accident Investigation Unit to apportion blame or liability. The sole objective of the investigation and the reports produced is the determination of the causes, and, where appropriate define recommendations in order to prevent future accidents and incidents.

SYNOPSIS

Classification:	Accident	Occurrence category:	Ground Collision (GCOL)
Level of investigation:	Limited	Type of operation:	Non-commercial Other-than-complex (NCO)
Date and time:	1) 29 January 2019 -14:05 UTC 2) 30 April 2019 - 07:30 UTC 3) 5 October 2019 - 10:45 UTC	Phase:	Taxi
Location:	Limburg Regional Airport (EBST)	Operator:	Private
Aircraft:	1) Piper Warrior PA-28-161 2) Piper PA-46-350P 3) Diamond DA40	Aircraft damage:	Substantial
Aircraft category:	Fixed Wing – Aeroplane – Small Aeroplane (MTOW ≤ 5700 kg)	Injuries:	None

Abstract:

In 2019, 3 similar ground accidents occurred on the Limburg Regional Airport (EBST). Although the aircraft damage can be considered as substantial, the risk for injuries is very low. For this reason one limited desk investigation was initiated for these 3 events.

Summary of factors:

Organisational	Development – Design – General – Airport Management – Communication – General - Airport
Aircraft	Aircraft structures – Wing structure - Damaged
Personnel	Psychological – Attention/monitoring – Monitoring environment – Pilot Action/decision – Info processing – Expectation/assumption – Pilot
Environmental	Physical environment – Object – Fence post – Ability to respond/compensate Operating environment – Airport facilities/design – Obstruction markings – Ability to respond

1 FACTUAL INFORMATION

1.1 History of flights

1.1.1 Accident 1: 29 January 2019 – 14:05 UTC - Piper Warrior PA-28

The aircraft took off from Antwerp Airport (EBAW) for a cross-country flight to EBST, where runway 24R was in use. After one touch and go, the aircraft landed and exited the runway to the right. However, this taxiway was obstructed by a fence. The pilot, who was the only occupant, then decided to turn back and backtrack on the runway and exit via another taxiway. On this route, a gate was recently installed. The pilot was not familiar with this configuration and did not notice, nor followed the curved taxiway line that would have led him to the centre of the gate. Maintaining his aircraft left to taxiway line, he did not realize his aircraft might interfere with the fence post this way. The left hand wing hit the edge of the gate, causing substantial damage. The aircraft came to a halt in the grass next to the taxiway. The pilot immediately stopped the engine and safely vacated the aircraft.

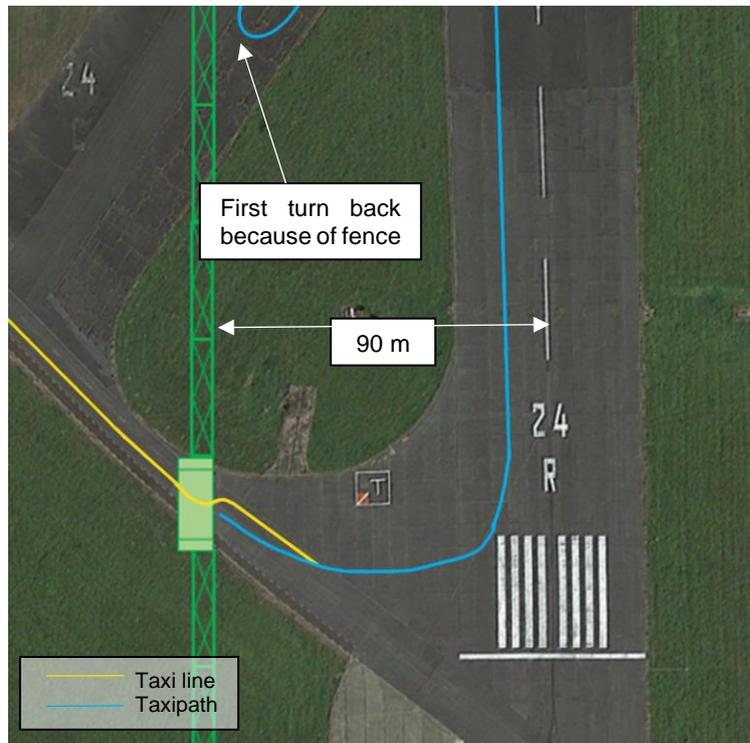


Figure 1: sketch showing the fence, gate (indication in green) and taxi line.
Google Earth image dates from 2016



Figure 2: curved taxi line and green gate against green grass



Figure 3: Pictures showing gate and damage

1.1.2 Accident 2: 30 April 2019 – 07:30 UTC - PA-46-350P

After landing on runway 06, the aircraft taxied to the parking area. As for the previous case, the aircraft did not follow the taxiway line and the tip of the left-hand wing hit the fence.



Figure 4: the PA-46 right after the collision, showing the deviation from the taxi line

1.1.3 Actions by aerodrome operator

After these 2 accidents, the aerodrome operator improved the markings in the autumn by:

- applying red/white markings on both ends of the fence;
- extending the yellow taxi line to the end of the runway - hereby eliminating the short zigzag- so that the taxiway can be intercepted earlier when taxiing from the runway.



Figure 5: aerial view of improved situation

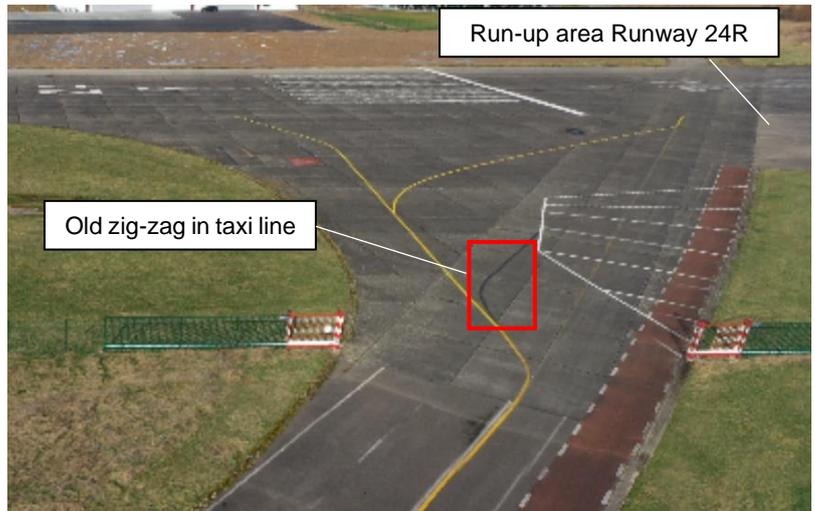


Figure 6: other view showing the change in the taxi line

1.1.4 Accident 3: 5 October 2010 – 10:45 UTC – Diamond DA-40 TDI Star

A Diamond DA40 operated by a solo student of Ostend Air College hit the same fence but with the right hand wing when taxiing back to runway 24R after a stop at EBST. The yellow taxi line was again not followed.

His statement: “I taxied from the apron to the runway. Once arrived at the fence, I reduced speed and checked the clearance along both wings. I turned towards the run-up area when suddenly the aircraft came to a halt. At first I didn't know what had happened, as I had checked both sides. I stopped the engine immediately and stepped out to have a look. Apparently I had hit the side of the gate with the right wingtip.”



Figure 7: markings at the touched fence



Figure 8: damage to the right hand wing

1.2 Personnel information

Table 1: General pilot data:

Pilot of	1) Piper PA-28	2) Piper PA-46-350	3) Diamond DA-40
Nationality	Belgian	French	Belgian
Gender	Male	Male	Male
Age	63	56	20
License	PPL(A), initially issued in 2014	CPL(A), initially issued in 2010	Student pilot
Ratings	SEP (land)	SEP (land), MEP (land), FI(A), IR ME	N/A
Medical	Class 2	Class 1	Class 2

1.3 Aircraft information

Table 2: General aircraft data

Type	1) PA-28-161	2) PA-46-350P	3) DA40 TDI Star
Serial number	2842278	4636630	D4.303
Manufacturer	Piper Aircraft Inc.	Piper Aircraft Inc.	Diamond Aircraft Industries
Year of manufacture	2006	2014	2007
Certificate of Airworthiness	Issued by the Belgian CAA on 18 July 2017	Issued by the French CAA	Issued by the Austrian CAA
Airworthiness Review Certificate	Valid until 25 July 2019	Not known	Not known
Certificate of Registration	Issued by the BCAA on 20 March 2007	Issued by the French CAA	Issued by the Austrian CAA
MTOM	1107 kg	1969 kg	1198 kg
Wing span	10,8 m	13,11 m	11,94 m

1.4 Aerodrome information

The fence was installed end 2018 further to the changes to the runway configuration – the grass runway 24C (see Figure 1) was to be removed. The fence stands 90 m from the center of runway 24. The width of the gate is 19,48 m. The distance between the taxi line and the gate in open position is 9,95 m at the northeast side and 9,53 m at the southwest side.

EBST is a non-certified aerodrome. The technical conditions rules for the exploitation of such an aerodrome in Belgium are described in BCAA Circular GDF-04.

The new situation was not published in the AIP, neither communicated to the pilots when contacting the aerodrome before the flight (Aerodrome is PPR, prior permission required).

2 COMMENTS AAIU(Be)

In paragraph 5.3.2.5. of BCAA Circular GDF-04 it is stated that neither installations nor objects shall be placed within 15 m from the centerline of a taxiway, unless they are necessary for aerial navigation, and frangible and installed as low as possible. Compared to ICAO Annex 14, EBST can be seen as a code 2B aerodrome. This Annex describes that that the minimum separation distance for a taxiway center line to an object should be 20 meters.

When during works or due to infrastructural adjustments new risky situations arise, these should be properly assessed and when needed immediately mitigated. In this case, the new situation was questionable regarding risk mitigation:

- The fence was painted in a dark green color. It does not stand out against green grass background
- The width of the gate does not allow for much deviation from the taxi line (and is not conform GDF-04)
- The angle of the gate/fence with that taxiway asks for some extra maneuvering, hence the curved taxi line. A perpendicular angle with the taxiway would have been better.

The new situation, eliminating the short zigzag in the taxiway and the red/white markings on both ends of the fence is undeniably an improvement.

However, still a third accident happened in October. This was somewhat different from the other two as the aircraft approached the gate and fence from the other side and was taxiing from the parking spot towards the runway. So the (student) pilot knew the situation as he already passed the gate that day when arriving at EBST. He also declared that he did pay attention to pass the gate but yet still touched it when turning towards the run-up area. This area is some 50 meters behind the gate (see Figure 6), so it wasn't needed to turn at that location. Should he have followed the taxi line, nothing would have happened. The event was probably due to his low experience and some stress involved with such operations (solo training flight).

AAIU(Be) is of the opinion that a gate perpendicular on the taxiway, not requiring any maneuvering close to the gate, and somewhat wider would have been better.

3 SAFETY MESSAGES

3.1 Towards pilots

Safety message:

Never assume that when you are on a taxiway that you will be clear of any object. Always look outside and monitor the clearance of the wings. Taxi lines are there to assist in this clearance.

3.2 Towards aerodrome operators

In this case, the new situation was questionable regarding risk mitigation. The third occurrence shows that even after thorough marking accidents still can happen. This shows that “prevention is still better than cure” concerning design.

Safety message:

When during works or due to infrastructural adjustments new risky situations arise, these should be properly assessed and when needed **immediately** mitigated before any construction.

If mitigation is, for whatever reason, not completely possible, risky situations (or so-called ‘hot spots’) should at least be communicated. This **communication** can be, but not limited to:

- written (in AIP);
- visual (markings and signs at the hot spot);
- oral (when pilot takes prior contact before the flight).