

Safety Investigation Report

Ref. AAIU-2020-01-31-01
Issue date: 19 November 2021
Status: Final

About this report

As per ICAO Annex 13 and EU regulation EU 996/2010, each civil aviation 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.

INTRODUCTION

Classification:	Incident	Occurrence category:	SCF-NP
Level of investigation:	Standard	Type of operation:	Non-commercial other-than- complex - NCO
Date and time¹:	31 January 2020 11:30	Phase:	Initial climb
Location:	51,235624°N 04,437490°E	Operator:	Arendair Ltd
Aircraft:	Partenavia P68B	Aircraft damage:	Minor
Aircraft category:	Fixed wing - Small aeroplane (MTOW <5700kg)	Injuries:	None

Abstract

During a local flight after maintenance, when the aircraft was climbing at 1000 ft, the emergency door fell out. The door landed at short distance of a car.

AAIU(Be) was notified of the occurrence by the report made at the European Aviation Safety Reporting Portal (ECCAIRS) by the operator and the Antwerp Airport Inspection services. Investigators inspected the aircraft and the recovered part on 5 February 2020.

¹ All time data in this report are indicated in UTC, unless otherwise specified

Summary of factors

Organisational	Development – Design – Design of document/info Development – Design – Equipment design
Aircraft	Aircraft structure – Emergency exit – Design Aircraft structure – Emergency exit – Unintentional use/ operation Aircraft handling/service – Placards and markings – Not specified
Human	Action/decision – Aircraft inspection – Emergency exit – inadequate inspection
Environmental	/

Cause

The emergency door operating handle was not in the “closed” position and therefore not securing the door in its position before the flight.

Contributing factors:

The operation of the handle is not protected for unintentional action and the positions (locked – released) are not identified.

FACTUAL INFORMATION

1.1 History of flight

The aircraft took off from EBAW after maintenance at a local Part-M Subpart F Maintenance Agency. At an altitude of 1000 ft, when initiating a left-hand turn above the reporting point PORTA towards reporting point KALLO, the emergency exit window fell out.

The pilot reported the loss to ATC and returned to EBAW.

The falling part was spotted by a woman and her son, driving around in the neighborhood. The son noticed a plane flying over, when he suddenly saw that an object fell from the plane. This object landed +/- 15m from the vehicle next to the road on a piece of wasteland (position 1 on Figure 1).

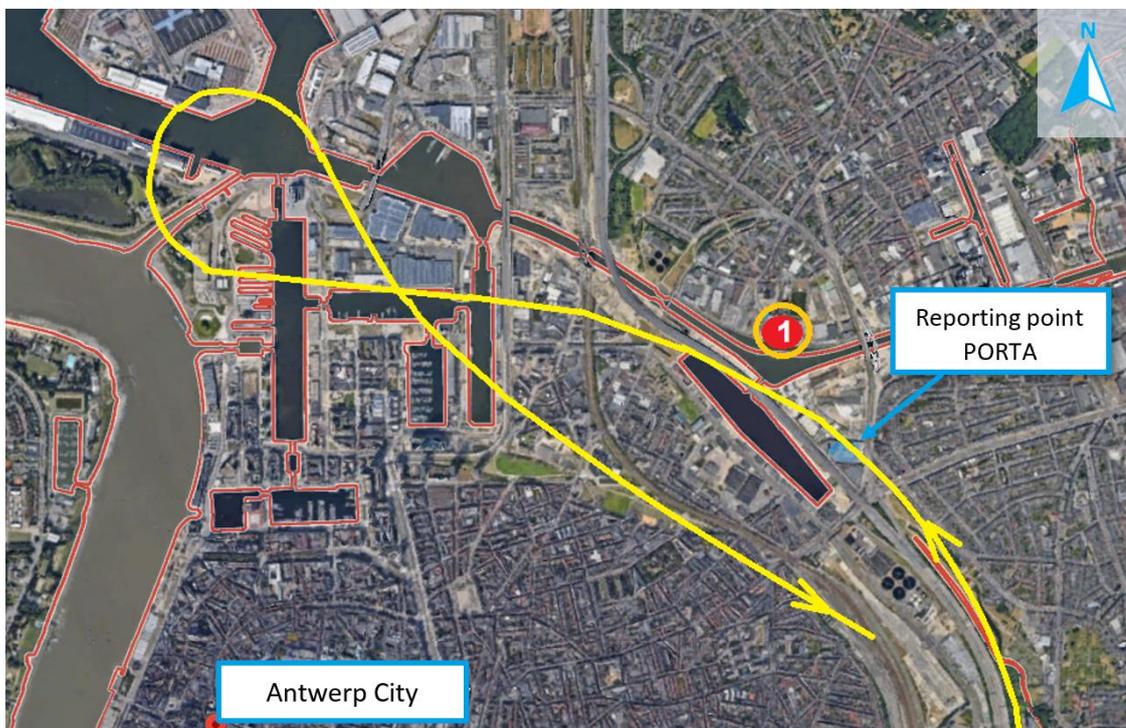


Figure 1: Flight track and position (1) of the part (© Google Earth - 2019)

When the woman and her son drove back home (in the other direction) they stopped at the place where the object fell to see what it was. They found this object and it appeared to be the emergency exit window lost by the aircraft. The woman saw an article about this incident in the media the next day and then called the airport inspection services and brought the window to the airport.

1.2 Injuries and damage

There was no injury to anyone.

The window was bent by the impact, but externally showed limited damage.

1.3 Aircraft information

The Partenavia P.68B "Victor" certification was granted on 24 May 1974 to Partenavia. The type certificate was transferred to Vulcanair in 1998.

The P68B is a six-seat twin piston engine, high wing airplane with fixed tricycle landing gear. The P68B is an evolution of the original P68, with a lengthened fuselage.

Table 1: Airframe data

Model	Partenavia P68B
Serial number	16
Manufacturer	Partenavia (Vulcanir)
Year of manufacture	1974

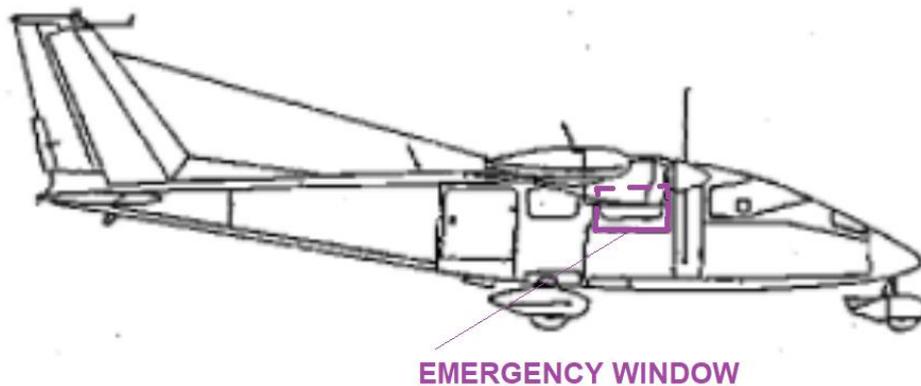


Figure 2: P68B Drawing

ANALYSIS

2.1. Operation of the emergency window

The opening of the emergency window was verified (Maintenance schedule; Emergency exit – check for condition and security) during maintenance.

The handle can be put in two extreme positions;

- Upwards (window locked)
- Downwards (window released)

The window is held in position by two metal strips sliding into locking slots solidarizing the bottom part of the window with the aircraft structure. The top part of the window is inserted in a U-shaped angle profile.



Figure 3: Emergency window

The system was tested and found in working condition.

After the event, the aircraft was fitted with the emergency window of another Partenavia P68 aircraft of the same company undergoing maintenance. This showed that the aircraft structure was intact.

A picture taken after the event shows the locking metal strip stowed (window release position)

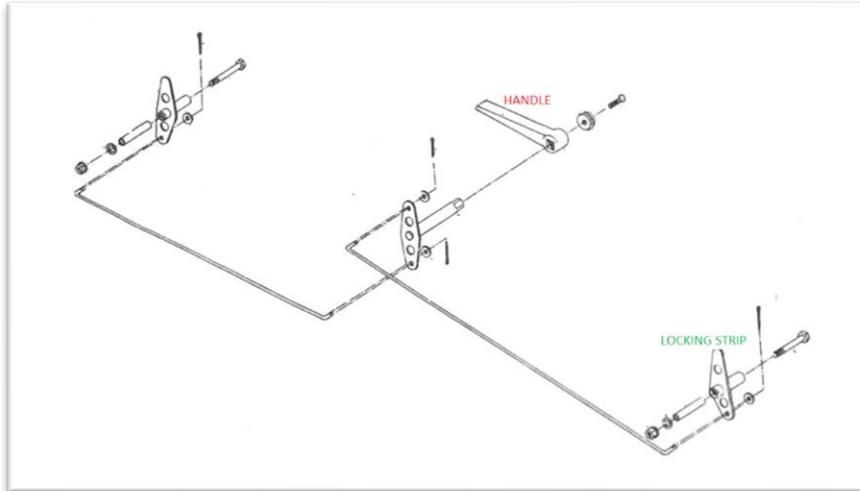


Figure 4:Emergency window operating mechanism

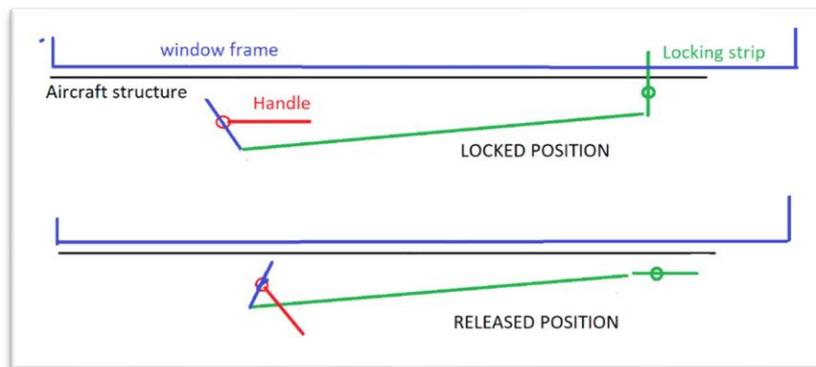


Figure 5: Emergency Window handle operation



Figure 6: Handle in the 'closed 'position



Figure 7: Handle in the 'release' position



Figure 8: Emergency window topside installation

2.2. Maintenance

The maintenance programme shows regular checks of the emergency exit locking mechanism:

100 FH Inspection schedule			
(4) EMERGENCY EXIT - Check for condition and security.	0		

And

<p>3.2. Pre-flight inspection</p> <p>This paragraph is for the pilot and/or mechanic and should be performed before each flight</p> <p>(...)</p> <p><i>o. Emergency window fastened.</i></p> <p>(...)</p>

2.3. Markings

The markings pertaining to the emergency window are defined in the Pilot Operating Handbook (POH). The check lists included in the POH do not cover specifically a check of the latching of the emergency window.

PLACARDS:

1. On Emergency Windows:

"EMERGENCY EXIT - ROTATE HANDLE - PUSH WINDOW OPEN"

The aircraft was equipped with the placard as prescribed.

The POH makes no reference to markings of the handle positions (window locked / released). The aircraft was not equipped with such marking. Another aircraft of the same type and age present in the hangar during the inspection showed the same situation.

The absence of indication makes it difficult for anyone to determine whether the handle is in the correct position, as required during pre-flight check.

The person making the determination has to know in which position the handle has to be – or himself physically check if the window is effectively locked, however the way to perform this task (pushing the window to see whether it moves ?) is not described in the manufacturer's documentation.



Figure 9: Emergency window unlocking handle

More recent P68 aircraft have another configuration of emergency window locking system.

CONCLUSIONS

3.1. Findings as to causes and contributing factors

- The release of the emergency window was most probably due to the operating handle unintentionally left in the “window release” position after maintenance and this condition was not detected during pre-flight check.

[cause]

*[Human - Action/decision – Aircraft inspection – Emergency exit – inadequate inspection]
[Aircraft – Aircraft structure – Emergency exit – Unintentional use/operation]*

- The positions (locked – released) of the emergency window operating handle are not identified.

[contributing factor]

*[Aircraft – Aircraft handling/service – Placards and markings – Not specified]
[Organisational - Development – Design – Design of document/info]*

3.2. Findings as to factors that increase(d) risk

- The operation of the handle is not protected for unintentional action.

[contributing factor]

*[Aircraft – Aircraft structure – Emergency exit – Design]
[Aircraft – Aircraft structure – Emergency exit – Unintentional use/ operation]
[Organisational - Development – Design – Equipment design]*

SAFETY ACTIONS AND RECOMMENDATIONS

4.1. Safety issue: Unclarity about the position of the operating handle

The maintenance organisation took the initiative to mark the extreme positions of the emergency window opening handle.



Figure 10: Safety action; marking of the handle position

AAIU(Be) supports the safety action of the maintenance organisation.

4.2. Safety issue: Unclarity about the status of the emergency window

Safety recommendation: BE-2021-01:

It is recommended that Vulcanair:

- improves the Partenavia P68B equipped with the operating system of the emergency window similar to the one of the incident aircraft as to clarify the status (closed – release) of the emergency window
- prevents its unintentional release and
- includes the check in the aircraft POH.