

Synopsis

date of accident

Saturday October 26, 2002 at 1:20 p.m. ①

scene of the accident

Aerodrome of Saint-Barthélemy (971)

Nature of theft

Aircraft

Pilatus PC 12-45 airplane **exploiting**

Translem (Switzerland)

People on board

Instructor + pilot

HB-FOP - October 26, 2002

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1.3 damage to the aircraft

The nose gear is broken. The right main landing gear is folded; the left is veiled.

The fuselage was badly damaged at the front. The propeller blades are found leading edge back, damaged; they are free in rotation. The pitch control is broken. The wings are damaged.

The shutters are slightly extended. The left pane came out three centimeters.

In the gap generated by this turning are stuck elements of vegetation. The control handle is on 40 °. One amp circuit breaker corresponding to the shutter control is found triggered. During a subsequent energization, circuit breaker tripped, it has been verified that the position indication of the flaps in the cockpit was consistent with their real position (about 3 °) and that the flaps were working properly in both ways.

1.4 personnel information

1.4.1 The pilot

55 years,

PPL (A) issued by Switzerland in 1998

IR qualification

1,050 flight hours of which more than 600 on type and around 100 in three previous months

1.4.2 The instructor

60 years,

PPL (A) issued by France in 1991 flight instructor rating single-engine piston class rating

1. Aircraft information

The Pilatus PC 12-45 is a single-engine turbine. It is not certified in France on the date of the accident. It is equipped with a PT6A-67B engine manufactured by Pratt and Whitney Canada. The aircraft registered HB-FOP, S / N 291, was built in 1999 and has a certificate of airworthiness issued by the Swiss Confederation.

On the PC 12-45, the symmetry of the shutters is controlled automatically. In case of asymmetry, the control current is cut and an error message is generated. This message can be read in an on-board computer called FCWU (Flap Control and Warning Unit). Other messages, whether they relate to shutters or other systems, can also be saved.

An overspeed speed alarm sounds in one of the cases following:

the airplane speed exceeds 240 kts;

the aircraft speed exceeds 165 kts with the flaps not retracted;

the aircraft speed exceeds 130 kts; flaps turned more than 15 °.

1.6 Weather conditions

The weather conditions were good. The wind was oriented from 100 ° for 10 to 20 kt.

1.7 aerodrome information

The aerodrome of Saint-Barthélemy is approved for restricted use, according to conditions specified in the specific instructions of the approach card / visual landing (see annex 1). It is “reserved for characteristic aircraft and appropriate performance and to pilots of aircraft that have actually used the aerodrome under the control of an instructor pilot who will have recognized them as fit.

These pilots must appear on the list of authorized pilots kept by the District aeronautics of Guadeloupe ”.

This restriction is justified by the particular nature of the approach on this track, of dimensions 650 x 15 m, which extends between the sea to the west and a hill to the east with a significantly stronger plan (around 12%) than ordinary. The aerodrome map specifies in particular that take-offs and go-arounds on short final are prohibited at QFU 28.

The special instructions have since been amended as follows:

“Specific training delivered by a certified instructor is required for authorization to access the aerodrome, in accordance with instruction No. 1.DRAC / AG / D3 of July 11, 2003”.

1.8 Additional information

1.8.1 Testimonials

The airplane pilot clarified that the accident flight was part of a series of flights carried out with a view to obtaining authorization to use from the aerodrome. Knowing the plane, he claims to have been surprised by his unusual behavior.

He specifies that at the exit of the turning of 15 ° of flaps, he checked the indication of the robbery and testifies to having felt the effects of this last action. He adds that he then ordered a 40 ° turn.

He then expected a speed reduction from 110 kts to 85 kts, but did not nothing observed. He failed to slow the aircraft, even after touching it, to the application of the brakes and the reverse gear. However, two days earlier, with a stronger tail wind, on the same aerodrome, as part of its training in the use of the aerodrome, it was posed without problem. He adds that a number of incidents have occurred in the past two years operating the device. He reports in particular that he had a blockage of shutters repeatedly.

The instructor indicates having resumed a training already started and proposed to to "let go" of the pilot after the satisfactory execution of three landings on each QFU. He considers that the latter was the captain. He had confidence in his pilot skills and his knowledge of the aircraft. He

has announced that he considered the plane too fast, but let him fly it until end. He cites the same downwind landings two days before, at the end which the aircraft stopped at mid-runway. Various witnesses report a rapid and high arrival of the aircraft on Track.

1.8.2 data recorded on board

Exploitation of the FCWU's non-volatile memory revealed an error message seventeen minutes and twenty-nine seconds after switching on airplane voltage. This indicates that a circuit breaker has tripped. There has not, for the flight of the accident, a message corresponding to an asymmetry shutters.

1.8.3 Manufacturer's analysis of a possible malfunction of the step reverser

According to the manufacturer, the pilot told witnesses that he was using the small ground step during approaches, to decelerate. Pilatus indicates that a use of the propeller in small ground flight increases the lead time work of the inverter.

1.8.4 Analysis of the manufacturer on a possible reentry not ordered shutters

Airworthiness directive HB2001-005 issued by the Federal Aviation Office

Civil (OFAC) mentions the existence of a possible dysfunction of the flap control system, which can cause reciprocating movement of flaps between the selected position and the 40 ° position. The instruction recommended in this case selects the 40 ° position and land as soon as possible. This malfunction was corrected by the application of SB 27-011.

No event relating to an uncontrolled return of the flaps to 0 ° has not been reported to the manufacturer. During certification, this event was classified as “extremely unlikely” and the planned failure modes systematically lead to tripping of the main circuit breaker of fifty amps. No failure mode resulted in tripping of an ampere circuit breaker corresponding to the command Shutters.

2.1 Conditions required to land in Saint-Barthélemy

The pilot called in an approved instructor to authorize him to use the aerodrome of Saint-Barthélemy, in accordance with the conditions specified on the map visual approach / landing. The instructor selected held a single engine piston rating, but not a qualification authorizing using the Pilatus PC 12. He could not therefore be captain from the plane. This resulted in a situation where the instructor could only give an appreciation of the configuration and trajectory of the aircraft without power supervise the flight precisely, nor take back control. The pilot, meanwhile, had its own appreciation for the quality of the approach, account given his experience on the plane. However, this assessment was altered by his little experience in the use of the aerodrome.

2.2 execution of the approach

The aircraft took off at QFU 10; taking off at 28 was prohibited. After half lap, he presented himself in the final 28. He then found himself with a tailwind not negligible (100 ° / 10 to 20 kts), which notably had the effect of obliging the pilot to adopt high air slope values during a stabilized final.

The pilot set the airplane in "landing" configuration, and then endeavored to lengthen the approach path and absorb excessive speed. The alarm "Overspeed" was heard by the pilot and confirmed by the instructor (this corresponds to a speed greater than 130 kts in a configuration

"Turning flaps greater than 15 °"). The pilot did not plan to interrupt the approach thinking they know enough about their plane. In short final, the go-arounds are prohibited. The aircraft therefore arrived at the aerodrome with high speed.

2.3 landing

The aircraft touched down midway. The pilot applied the brakes and the reverse gear. Given the speed and narrowness of the track, and therefore the times of reaction to deviations, he could not avoid leaving the side track of the left train, then the longitudinal exit of the aircraft. The position of the propeller blades after the accident shows that the reverser worked, but probably too late to avoid the runway excursion.

2.4 Shutdown of shutters

Shutdown interruption is due to overload electric occurring seventeen minutes and twenty-nine seconds after switching on aircraft powered on, causing the circuit to be tripped at the shutter control in the cabin. Given the difficulty of assessing the time of this power-up, it is not possible to specify when this corresponds in the sequence described above. However, this value is compatible with an occurrence during the final or immediately after landing.

The logic of the overspeed alarm heard during the approach indicates that, after positioning the shutter control at 40 °, a steering greater than 15 ° was reached while the speed was greater at 130 kt. Uncontrolled return of the flaps is unlikely since these were functioning properly after the accident. The position of the flaps on the wreckage is therefore most likely the result of pilot action, perhaps to be involuntary.

The hypothesis of an electrical overload and tripping of the circuit breaker during the final, leading to the impossibility to exit the flaps at the turning of 40 °, cannot be retained because it would not have been possible to retract the flaps after landing.

The probable scenario is therefore that of an exit from the flaps towards a turning 40 °, then a missed landing, an action by the pilot aimed at returning the flaps, a runway excursion with hanging of a branch during the start of the school year flaps, blocking the mechanism by overload and triggering the breaker. Finally, an involuntary action during the evacuation could bring back the order around 40 °.

3 - Conclusion

The accident was due to the pilot's decision to pursue an approach not stabilized while in short final, the go-around is not possible. The strong ground speed following downwind and excessive airspeed of the airplane is a contributing factor. The pilot's excessive confidence in the ability to Deceleration of the aircraft is also a contributing factor.
