DATA SUMMARY

LOCATION

Date and time	**Sunday, 29 July 2012; at 13:10 local time**
Site	**Évora Aerodrome – Alentejo (Portugal)**

AIRCRAFT

Registration	**EC-IBY**
Type and model	**PILATUS PC-6 B2-H4 Turbo Porter, S/N: 815**
Operator	**Skydive Lillo**

Engines

Type and model	**PRATT & WHITNEY PT6A-34**
Number	**1 S/N: PCE-56785**

CREW

Pilot in command

Age	**34 years**
Licence	**CPL (A)**
Total flight hours	**1,550 h**
Flight hours on the type	**205 h**

INJURIES	Fatal	Serious	Minor/None
Crew			**1**
Passengers			
Third persons			

DAMAGE

Aircraft	**Minor – Rudder and left elevator**
Third parties	**None**

FLIGHT DATA

Operation	**Aerial work – Commercial – Skydiving**
Phase of flight	**Descent – Approach**

REPORT

Date of approval	**27th January 2014**

1. FACTUAL INFORMATION

1.1. History of the flight

The pilot was carrying out several skydiving flights on the morning of 29 July from the Évora Airport, in the region of Alentejo. During rotation n.º 10, on Sunday, the aircraft climbed to the drop altitude, 13,500 ft, and the skydivers jumped from the airplane. When the pilot started to descend with a pronounced changed in nose attitude, he felt a heavy impact in the tail section, followed by a violent vibration of the controls and in the instrument panel.

The elevator control stopped moving in the up-down direction and the rudder pedals were stuck hard right. The aircraft seemed to be out of control, at least in terms of the pitch and elevator-altitude control. The pilot was wearing a parachute as part of his standard equipment.

The pilot reported the emergency to the airport's control tower and carefully evaluated the situation, since he was at a sufficiently high altitude. He used the electrical stabilizer trim system and, realizing he could change the pitch attitude, was able to reduce the speed first down to 90 and after to 60 kt.

The pilot was able to visually verify that the horizontal stabilizer (and the elevator) remained in the same position. With this knowledge regarding the condition of the aircraft, he decided to try to land on the runway at the airport.

Figure 1. Condition of the tail section after landing

During the final part of the descent and approach, the pilot checked the airplane's maneuverability at different bank and pitch angles. The little control he had over the pitch angle was sufficient to enable him to make a long approach using a shallow angle of descent.

He reported his intentions to the control tower and requested help to check the condition of the airplane's tail. The tower reported nothing unusual in its visual check of the tail.

The airplane came in too high on the first attempt and the pilot went around. He started a flatter approach 3 NM away from the threshold. He had trouble keeping the aircraft centered on the localizer but managed to remain centered until touchdown, at which point the airplane veered sharply to the left.

The aircraft departed the runway and travelled on the shoulder until it stopped. The pilot barely braked for fear of how the airplane might react.

The landing did not cause any damage. The pilot reported the airplane's condition to the tower and then turned off the communications equipment and the master switch.

1.2. Aircraft information

The Pilatus PC-6 B2-H4 S/N 815 was manufactured in 1982 and had been operated by Skydive Lillo since August of 2001. It was maintained by an approved Part 145 Maintenance Organization, which also acted as an approved CAMO. Both the MO and the CAMO belong to the aircraft manufacturer. All maintenance activities were performed by personnel from the maintenance organization.

The aircraft had 10,952 flight hours and 36,973 landings. The last overhaul had been performed in February 2010 with 9,879:56 flight hours.

The design of the PC-6 is over 50 years old and thus follows the criteria used back then. For example, the direction of the hinge bolt on the rudder, from bottom to top, which from a modern perspective is not a recommended practice.

Close-up 1. Rudder support fitting in the tailfin

1.2.1. *Aircraft maintenance*

Due to its flight operations, either in Spain or Portugal, the maintenance of the aircraft was carried out at the aerodrome where it was based, and not at the maintenance organization's facilities.

In April 2012, with 10,845:03 h, a certified mechanic of the maintenance organization carried out a 100-hour inspection at the operator's facilities in the Lillo Aerodrome, its base of operations. During this inspection Airworthiness Directive EASA AD 2011-0230 was implemented, which required the application of Pilatus Service Bulletin SB 55-001 Rev. 1. Part of this AD/SB required replacing the lockwire on the upper hinge bolt on the rudder and the outboard bolts on both elevators.

AD 2011-0230 states, among the reasons for its issuance: a case of loss of elevator and rudder hinge bolts has been reported. The investigation indicated that this loss was suspected to have been caused by an incorrect torque and locking of the bolts.

The approved Maintenance Organization Exposition (MOE) of the MO requested a duplicate inspection for critical tasks such as installations on flight controls. At the time of the incident the MOE allowed, in case that no other authorized person is available, that the duplicate inspection can be performed by the same person who did the maintenance task after a break of 15 minutes.

The dual inspections required by these tasks for the flight control surfaces were performed by the mechanic, after a break, as allowed by the process contained in the Pilatus Maintenance Organization Exposition (MOE), which lists it as an exception when only one CAMO mechanic is available at the site.

In June 2012, with some 60 additional flight hours on the aircraft, another 100 h inspection was carried out at the Évora Airport in Portugal. During this check the electrical fuel pump was replaced as an additional item. The task was performed by a different mechanic from the one who did the previous inspection in April. Part of the 100 h inspection required examining the hinge bolts on the three control surfaces specified in AD 2011-0230. No discrepancies were noted in these components. The mechanic was unsure about the lock-wire installation of the left hand elevator hinge bolt after the completion of the inspection hence he added a follow-on task to the Hold Item List.

The airplane flew approximately 40 additional hours after this last 100 h inspection in June.

1.2.2. *Additional information*

The pilot reported that during the last 100 h check, he told the mechanic that he was having problems with the rudder, which was travelling beyond the base stops and this

excess travel was leaving a mark in the area of the upper hinge bolt. The mechanic examined the settings on the rudder and checked the adjustment on the travel stops. Based on his assessment and as no spare parts were available, he told the pilot that the problem could wait until the next 100 h inspection to be resolved. He added the rudder stops to the Hold Item List of the aircraft.

1.3. Meteorological and aerodrome information

Weather conditions at the Évora Airport were CAVOK (no cloud ceiling and good visibility), with light wind at 3-4 m/s (5-8 kt) and a temperature of 29 °C.

The Évora Airport, designator LPEV, is located 3.5 km south-southeast of the city by the same name. It is authorized to handle IFR and VFR flights, three-axis ULMs in groups of three or more aircraft, and even nighttime flights if arranged 24 h in advance.

The airport has one 1,300 m long, 23 m wide asphalt runway in a 01-19 orientation.

The airport has an aerodrome flight information service (AFIS) on a frequency of 122.7 MHz. This service maintained radio contact with the pilot, activated the alert at the pilot's request and notified emergency services on the ground.

1.4. Tests and research

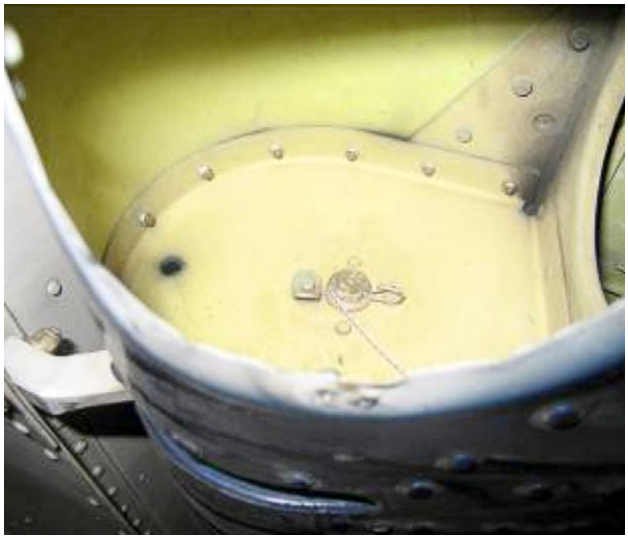
1.4.1. *Onsite investigation of the aircraft*

An examination of the aircraft revealed that the upper axle on the rudder and the point where it attached to the tailfin were missing. This caused the lower support to bend and partially break, along with the torsion tube and the rudder, which fell to the left on top of the left horizontal stabilizer and associated elevator, as shown in figures n.º 1 and n.º 2. The skin on the left elevator had been torn by the rudder trim tab lever, which limited the rearward motion of the rudder after it fell on the stabilizer.

When the service cover for the removal/installation of the rudder was opened, the missing upper hinge bolt was not found within the rudder structure. It is presumed that the bolt was lost during the flight. Only the bolt's washer was found inside the rudder, along with the lockwire, which was attached to the locking screw. The lockwire itself was broken and twisted at the hinge bolt end (see figure n.º 2). The locknut on this screw was found riveted in place, on the top part of the tooling hole.

The outboard hinge bolts on both elevators were examined through the service covers. These were also modified by SB 55-001 Rev. 1, as noted in point 1.2.1. The lockwires on both were found to be installed in the counter clockwise, or loosening, direction (see Close-up 2).

Figure 2. Lockwire on the rudder's hinge bolt



Close-up 2. Lockwire on the left elevator hinge bolt, installed counterclockwise

To check the behavior of one of these components in the as-found condition, the hinge bolt on the left elevator was loosened, with the following result: the torque needed to start it turning was 70 lb./in. (the tightening torque specified in the SB is 45 lb./in. plus the run-down torque). The lockwire allowed the bolt to be rotated 2/3 of a turn without offering any resistance. The wire remaining after this initial turn allowed the bolt to continue loosening. The force needed to loosen the bolt kept decreasing gradually after the initial turn. The lockwire broke before the hinge bolt was out of the hole, its final appearance being very similar to that of the lockwire on the rudder hinge bolt (see figure 3).

The deflection of the rudder was examined and the rudder was verified to have a mark resulting from being impacted by the hinge fitting at either end of its travel, indicating that it was exceeding the stops. The screws on the stops, or buffers, that regulate this limit at the base of the aft fuselage had lost part of the plastic material that performs this function and were unable to limit the rudder's range of travel within the required limits.

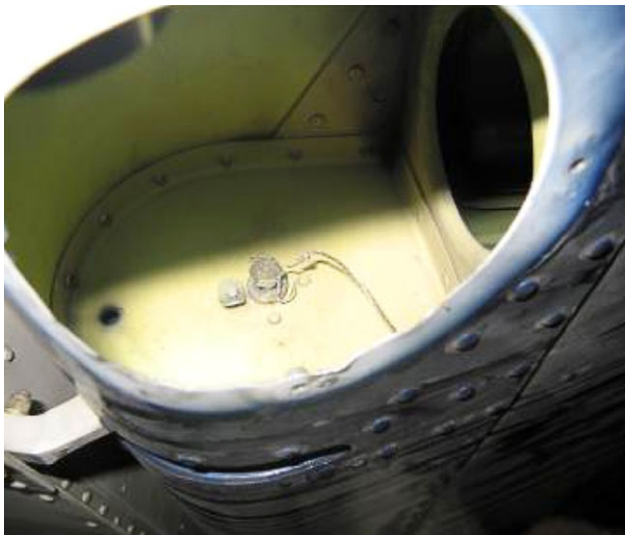


Figure 3. Lockwire on the left elevator hinge bolt, after being broken

1.4.2. *Sample check of other aircraft*

In concert with SENASA and its partner AMTs, the condition of the hinge bolts on the rudder and elevators of two other aircraft being used for the same type of operation were checked. A total of six such bolts affected by EASA AD 2011-0230 and the Pilatus SB 55-001 rev. 1 were checked.

In both aircraft the directive and SB were verified to have been properly implemented with the correct installation of the lockwires on the hinge bolts, none of which showed signs of loosening.

Investigators had access to the maintenance records for several similar aircraft that are also used for skydiving activities. Three repeated and concurrent aspects were found involving the event at hand:

a) There were marks on the upper fitting indicating contact with the rudder sheet metal. These marks were consistent with the uncontrolled movement of the fitting during maintenance tasks and did not involve excess travel of the rudder during operations.

b) There were superficial marks on the hinge bolt due to the relative rotation between the bolt and the bearing. In some cases this was confirmed to be due to low support pressure from the sides of the rudder on the bearing and due to the limited amount of thread on the bolt, as well as to the thinness of the washer used. Despite this, the marks were superficial and there was very little wear.

Figure 4. Example of SB implementation on the right elevator of another aircraft

c) Axial clearance in the upper bearing with no apparent effect on its operation. A direct relationship exists between the mobility or range of travel of the main bearing and the weight of the rudder located on the extension of the tail assembly and on the lower part of the rudder. The play in this bearing allows the rudder to move axially upward up to 5 mm, since in the downward direction it rests on its support. This is corrected, as per the manufacturer's instructions, by applying structural glue to provide support to the bearing.

1.4.3. *Detailed examination of the fitting bearing and of the locking nut*

Once the support fitting was disassembled from the top point where the rudder and tailfin meet, it was noted that in its self-aligning position, the bearing exhibited some

seizing or resistance in certain positions of extreme misalignment with the axis of rotation (the bearing allows a misalignment of up to 7° with the axis of rotation). There was also some play in the bearing along its vertical axis.

Due to these apparent anomalies in the operation of the bearing, it was removed from its support and its components examined with the aid of optical amplification. The condition of the balls and races indicated a certain amount of wear due to the time in service, with slight wear marks and minor deformation due to overloading, but there were no clear symptoms that it was operating beyond its limits and generating excessive friction. The rudder hinge bearing has to be replaced during the partial overhaul at 3,500 h or 7 years (whichever comes first).

A visual inspection of the locking nut on the rudder's hinge bolt revealed the irregular appearance of the thread, so it was decided to disassemble it and conduct a more detailed analysis. The initial run-down torque measurement gave a value of between 10 and 15 lbf. in., on the same order as a new nut. When magnified optically, the metallic crests on the thread did not appear to be appreciably deformed, but some of the nylon on the roots of the thread was frayed and in some parts protruded beyond the thread.

1.5. Organizational and management information

1.5.1. *Maintenance organization*

The maintenance organization and CAMO of the aircraft, EASA Part 145 CH.145.02009, Pilatus, had at the date of the incident a MOE (Maintenance Organization Exposition), revision 10, dated 19 December 2011. Section 2.23.3, point b establishes that "in case of work away from base a technician can inspect and sign the work as inspected after a break of 10 to 15 minutes".

There was not an specific approval of such exemption by the national Swiss authority, FOCA. However, as this authority had approved the whole MOE, including such exemption, the maintenance organization understood that the procedure was in fact acceptable.

Pilatus, as maintenance organization, has informed that after the incident and the subsequent SMS internal investigation, the above mentioned exemption has been eliminated in the revision n.º 12 of the MOE.

1.5.2. *European aviation safety agency*

Part M continuous airworthiness of European norms, in rule M.A. 402 Performance of maintenance, establishes that: "all maintenance shall be performed by qualified

personnel, following the methods, techniques, standards and instructions specified in the M.A.401 maintenance data. Furthermore, an independent inspection shall be carried out after any flight safety sensitive maintenance task unless otherwise specified by Part-145 or agreed by the competent authority".

Thus EASA understands that the maintenance organization is not authorized, under current regulations, to allow a technician to perform a check independent from his own tasks. If the organization has to comply with the rule M.A. 402(a), a second and independent technician must perform the check when the flight controls are maintained. Neither Part M nor part 145 allow for exceptions to this rule, unless it is agreed or accepted by the competent authority.

In this last case, that the competent authority of the maintenance organization has accepted that this organization does not need to perform an independent inspection, the competent authority is in charge of checking such fulfilment and also should be able to affirm that a similar safety level is guaranteed.

1.6. Additional information

1.6.1. *Analysis by the maintainer of the error in executing the task*

The manufacturer and maintainer of the aircraft did a human factors study with the personnel who had carried out the maintenance tasks (Maintenance Error Decision Aid – MEDA) so as to identify the reasons and circumstances that led to the maintenance errors involved in this case.

The maintenance errors associated with the last two inspections done were identified:

- The lockwires on the two elevator hinge bolts and very probably on the rudder hinge bolt were installed in the loosening direction.
- This improperly installed lockwire was not detected during the dual inspection carried out by the same mechanic after a period lasting 15 minutes or more.
- The incorrect installation of the lockwire on the hinge bolts was not detected during the last 100 h inspection.
- One of the three possibly incorrectly installed lockwires was included in the list of pending items for the next inspection of the aircraft.

Several potential contributing factors were also identified:

- Limited access to the work area through the service holes due to the design of the aircraft.
- Time pressure in the execution of the tasks. The amount of time scheduled for off-site inspections does not usually include contingency time, which typically requires

overtime in order to comply with the client's expectations and with travel schedules.
- Not enough personnel to do all the tasks needed. Normally a single mechanic is sent to do scheduled maintenance tasks.
- Planning and organization of the tasks versus the supervisory work required.
- Communications between departments. On occasion there is additional pressure from the pilot/operator to return an aircraft to service early, based on an agreement with the planning departments of the maintenance organization that the individual performing the maintenance is unaware of.
- One-time occurrence involving the notification of the death of a close co-worker that could have affected the concentration during the performance of the task completed in June 2012.
- Deviation from work procedures/processes.

1.6.2. *Operational information on the performance and use of the rudder*

Pilot accounts and information compiled involving the operation of this type of aircraft indicate that the rudder places high demands on the pilot, who has a high workload during certain phases of flight.

On the one hand, the aircraft's tail wheel design makes it harder to steer on the ground, which requires constant input from the rudder.

On the other hand, during the takeoff and climb phases with high engine torque, the input from the right foot is so important that the checklist for skydiving operations includes a 2° right lateral compensation until before the descent is started.

2. ANALYSIS

2.1. General

The flights of the morning of Sunday, 29 July had been completely uneventful, with the airplane picking up the skydivers, climbing to altitudes of between 10,000 to 14,000 feet and then descending for a new rotation.

On the tenth of these flights, the takeoff and climb proceeded normally, but when the pilot changed the aircraft's attitude to descend, there was an impact in the tail. The control column and the control panel shook, the control stopped moving in the up-down direction and the rudder pedals were stuck hard right.

As the investigation revealed, the loss of the hinge bolt in the top part of the rudder allowed the rudder to fall on top of the stabilizer and left elevator, causing the elevator to jam, thereby limiting the controllability of the airplane.

The pilot managed to regain almost full control of the airplane to the point where he was able to attempt landing the airplane on runway 19 at the Évora Airport.

The pilot went around on the first effort and managed to land on the second after a longer and more stabilized approach. He touched down with the main gear on the runway centerline, but after a few meters a strong yaw force made the airplane depart the runway to the left.

The pilot decided to apply the brakes very carefully so as not to introduce greater instability into the run. The aircraft travelled over the grass shoulder until it came to a stop without suffering any additional damage.

2.2. Pilot's actions

The pilot's calm and relaxed reaction to a sudden emergency that exhibited no prior symptoms made it possible for him to correctly identify the fault and properly select the actions and potential solutions needed to regain control of the airplane.

In his statement, the pilot admitted considering the possibility of jumping, since he was wearing a standard issue parachute; however, the idea of abandoning the aircraft did not appeal to him. He though it a drastic option valid only as a last resort when no other survivable alternatives were available.

The pilot made use of his entire skill set as a pilot and managed to identify and then isolate the adverse effects of the malfunction and regain control of the airplane. He did this with the aid of components or systems that could actuate the identified and isolated components, the electric elevator trim tab on this type of aircraft, actions that were based on his sound knowledge of the aircraft's systems and its performance.

The good use of these procedures by the pilot made it possible to regain partial control over the pitch attitude. We must note as well that an essential prerequisite for the pilot to carry out the right procedures is a calm and relaxed reaction to the emergency. If this quality is not present in all of the steps described (identification, isolation and correction), the steps will be disorganized, prolonged or omitted, which inevitably leads to the introduction of new problems involving the control of the airplane that make abandoning it the only viable alternative.

Once the pilot was able to correct the dangerous nose down condition, he tested the bank and pitch and varied engine power and concluded that he was comfortable enough with the degree of control he had gained over the airplane to attempt a safe and stable landing following a long final approach.

Even during the landing run the pilot made the decision to remain in firm control of the airplane's actions by not applying the brakes to shorten the landing run. This decision, based on his experience, seems to have been quite correct given the dimensions of the runway and its shoulders, since no additional damage was done to the aircraft during this phase.

2.3. Aircraft performance

AD 2011-0230 and the associated Pilatus Service Bulletin SB 55-001 have been issued based on an in service incident, where an elevator hinge bolt became loose due to a broken lock-wire plate.

This potential condition of failure was intended to correct by making the indicated modification and increasing the tightening torque and lockwiring these bolts. This modification, implemented in the rudder and elevators on the incident aircraft, did not perform improperly since its failure was due to a mistake in the execution of the SB that resulted in the lockwire being installed counterclockwise, in the loosening direction, in both elevators and presumably in the rudder as well.

All of the information gathered and the tests conducted during the investigation into this incident indicate that the loss of the upper hinge bolt on the rudder resulted from its loosening, allowed by a lockwire installed counterclockwise, combined with an excessive amount of force required during normal operations of the rudder and increased by the not limited travel after the mismatch of the buffer stop.

Certain design aspects of the aircraft could be improved, such as the installation of the hinge bolt in an upward direction and the small service covers for installing and checking the hinge bolts. The resulting drawbacks, however, have been repairable and the manufacturer has found effective corrective measures over the long life of the aircraft to maintain its good operability.

Based on this event findings happened in Evora, Pilatus reviewed the design of the rudder hinge bolt and have plans to modify it in a way that the bolt is now installed from the top. Pilatus informed that this modification is outlined in the recommended SB 55-003 which will be issued soon.

2.4. Human factors

The news received by the technician who carried out the 100 h inspection on the aircraft in June 2012 that a close coworker had died could have contributed to his

failure to detect the improper installation of the lockwire on the hinge bolts. It is likely that neither his mind nor his concentration were properly focused on the inspection. Immediately stopping the work and taking an extended break would have been the most proper way to confront the unfortunate news. But the work load and the schedule made such an option unthinkable, so he resumed the inspection after a brief interruption. The fact that no coworkers were around to share in his grief could have contributed as a human factors aspect.

The mechanic, who did not want to compromise the work schedule, decided that the right thing to do was to continue with the task and continue the work as planned and thus satisfy the operator, even if he thought the supervisor would have relented and allowed him to take an extended break. The mistake involving the improper installation of the lockwire would probably have been detected on that subsequent inspection by a second mechanic without the adverse influence of the bad news.

2.4.1. *Independent (dual) inspections*

Having the same person that did the initial work conduct the second inspection after a break in excess of 15 minutes does not seem to be effective, as this event would indicate. It is comparable to having the same person that writes a text correct it. Most of the spelling mistakes will remain undetected.

In accordance with the MOE, an independent (dual) inspection can be made by the same person as an exception only if no other mechanic from the organization is available. And yet having a single mechanic during off-site inspections is the norm.

Therefore it may be inferred that having the same person that carried out the initial task verify his own work increases the likelihood that errors in the performance of the maintenance will be undetected before the aircraft resumes operations, in comparison to having a different individual conduct the second inspection.

2.4.2. *Off-site maintenance*

Pilatus carries out maintenance activities outside its facilities. These activities can be repair tasks or scheduled maintenance. In the case of scheduled maintenance, this is carried out mainly by a single mechanic, which limits the possibility of having a different individual perform the second inspection.

It also limits the ability to handle unforeseen or unscheduled work (such as faults found during the inspection, the appearance of human factors related to the task, reporting a previously undetected anomaly, etc.), resulting in critical pressure to complete the scheduled tasks in time. Thus, maintenance work that is done outside Pilatus facilities

by a single mechanic also implies a greater risk of maintenance errors due to the time pressure that this practice normally creates and to the inability to respond to this pressure.

2.5. Continuing airworthiness rules interpretation

The European regulations for continuous airworthiness, M.A.402 of Part M, concerning a necessary and independent double inspection for any maintenance task safety sensitive, must be understood as per EASA indications: there are no exceptions or exemptions for its fulfilment, unless the competent authority for the maintenance organization had formally accepted that this organization does not need to perform an independent inspection.

Even in that case the competent authority is responsible for checking such fulfilment and also should be able to affirm that a similar safety level is guaranteed.

In this incident, the maintenance organization only addressed this exception in their MOE, for occasions where only one person had moved out of his maintenance base; it has been also confirmed that its competent authority, Swiss FOCA, had not issued an specific approval of such exception thus they could not check its fulfilment and confirm a similar safety level.

As these regulations prevent from a decrease in the safety, as analyzed in point 2.4.1. Human Factors, and there was no formal authorization for its exemption, three safety recommendations have been issued: one to Pilatus as aircraft maintenance and two to Swiss FOCA as civil aviation authority of the maintenance organization.

3. CONCLUSIONS

3.1. Findings

- All of the crew and aircraft's licenses and certificates were valid and in force.
- The aircraft was authorized to conduct skydiving operations.
- The aircraft had 10,952 flight hours and 36,973 landings, and had passed a 100 h inspection in June 2012, 40 h before the incident.
- The pilot had a valid and in force license.
- The pilot had 1,550 total flight hours, 205 of which had been on the type.
- The pilot was flying the 10th rotation of the morning and, in his judgment, he was not affected by fatigue.
- All of the damage to the aircraft occurred in the tail section and was associated with the detachment of the rudder. No additional damage occurred during the emergency landing.

- During a 100 h inspection in April 2012, AD 2011-0230 and the corresponding Pilatus SB 55-001 was implemented, which involved the lock wire on the hinge bolt on the rudder and the outboard hinge bolts on the elevators.
- The improper installation of the lockwire on the hinge bolts on both elevators was verified on the aircraft (counterclockwise, opposite the tightening direction).
- Although the rudder hinge bolt was lost, all of the evidence found indicates that it too had been lock wired in the counterclockwise (loosening) direction.
- No direct relationship was found between any specific human factor and the improper installation of the lock wires.
- The improper installation of the lock-wire on the hinge bolts was not detected during the dual inspection carried out by the same mechanic who performed the implementation of the AD.
- During the ensuing and last 100 h inspection, the improper installation of the lockwire on the hinge bolts was not detected.

3.2. Causes

The rudder detached during the flight due to the loss of the hinge bolt on its upper fitting, which had become loose due to its lockwire being attached in the wrong direction.

Contributing to the loosening of this bolt was probably an excessive amount of load placed on the rudder during normal operations, possibly caused by the not limited travel resulting from the mismatch of the buffer stop.

4. SAFETY RECOMMENDATIONS

The maintenance tasks carried out on components of what are regarded as primary control systems on aircraft require independent dual checks in order to detect possible mistakes during the execution of said tasks and according to European regulations for Continuous Airworthiness (Part M, M.A.402), the exemption for its fulfilment is not possible unless the competent civil aviation authority agrees formally so and this way guarantee a similar safety level.

In the case at hand in this report, a mistake was made during executing a task that was not detected during the independent dual check. Thus the safeguard in place intended to catch errors of this type was not effective, as the check was carried out by the same technician.

Both the maintenance organization as the supervising authority did not fulfil the continuous airworthiness regulations, so two safety recommendations are addressed to

Swiss FOCA, as civil aviation authority of Switzerland, and one safety recommendation addressed to Pilatus as the aircraft maintenance organization.

REC 42/14. It is recommended that the Swiss Civil Aviation Authority, FOCA, review the Pilatus MOE suitability related to the elimination of exceptions for double independent checks.

REC 43/14. It is recommended that the Swiss Civil Aviation Authority, FOCA, review the Pilatus MOE suitability to check the adherence of the maintenance organization to the European Regulations for Continuous Airworthiness.

REC 44/14. It is recommended that Pilatus maintenance organization of the aircraft revise its MOE and delete the exception that allows a single technician to perform a dual independent inspection, and that said deletion be actively verified by its Quality System.