

INTERIM STATEMENT



ACCIDENT 67/18

STATE COMMISSION ON AIRCRAFT ACCIDENTS INVESTIGATION

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INTERIM STATEMENT

ACCIDENT

OCCURRENCE NUMBER 67/18

AIRCRAFT – BOMBARDIER DHC-8-402, SP-EQG

DATE AND PLACE OF OCCURRENCE – 10 JANUARY 2018, EPWA



Acting in accordance with Article 16.7 of 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 and repealing Directive 94/56/EC and following the standards provided in Annex 13 to the Convention on International Civil Aviation, the State Commission on Aircraft Accidents Investigation presents the following Interim Statement

The Interim Statement is a document detailing the progress of the investigation and any safety issues raised.

The Commission does not apportion blame or liability.

The Statement has been drawn up in the Polish language. Other language versions may be drawn up for information purposes only.

WARSAW 2018

Abbreviations and Acronyms

AMM	Aircraft Maintenance Manual
ATPL(A)	Airline Transport Pilot License (Airplane)
CA	Calendar Day
CMM	Component Maintenance Manual
DSA	Drag Strut Assembly
EASA	European Aviation Safety Agency
EH	Engine Hours
EN	Event Notification
EPKK	John Paul II International Airport Kraków-Balice – ICAO code
EPWA	Warsaw Chopin Airport – ICAO code
FH	Flight Hours
FNC	Functional Check
ICAO	International Civil Aviation Organization
IIC	Investigator in Charge
LDS	Lower Drag Strut
LLL	Lower Lock Link
LMT	Local Mean Time
LUB	Lubrication
LW	Landing Weight
MLG	Main Landing Gear

MO	Month
NLG	Nose Landing Gear
PLL LOT S.A.	LOT Polish Airlines S.A.
PS	Proximity Sensor
RWY	Runway
SCAAI/PKBWL	State Commission on Aircraft Accidents Investigation
TSB	Transportation Safety Board of Canada
ULC/CAA	Civil Aviation Authority of the Republic of Poland

General information

Occurrence reference number:	67/18			
Type of occurrence :	ACCIDENT			
Date of occurrence:	10 JANUARY 2018			
Place of occurrence	EPWA			
Type and model of aircraft:	BOMBARDIER DHC-8-402			
Aircraft registration marks:	SP-EQG			
Aircraft User/Operator:	Polskie Linie Lotnicze LOT S. A.			
Aircraft Commander:	ATPL(A)			
Number of victims/injuries:	Fatal	Serious	Minor	None
	0	0	0	63
Domestic and international authorities informed about the occurrence:	ICAO, EASA, ULC, TSB			
Investigator-in-Charge:	Andrzej Lewandowski			
Investigating Authority:	Państwowa Komisja Badania Wypadków Lotniczych			
Accredited Representatives and their advisers:	Accredited Representative: from TSB of Canada			
	Advisers from: <ul style="list-style-type: none"> - Transport Canada - Pratt & Whitney - Bombardier's Air Safety Investigation Office 			
Safety recommendations:	In the process of coordination with the addressee			
Addressees of the recommendations:	Operator			
Type o document containing recommendations:	Final Report and separate document			
Date of the statement:	10 January 2019			

Synopsis

On 10 January 2018, at 18:07hrs LMT the Bombardier DHC-8-402 airplane, registration marks SP-EQG, took off from EPKK for a scheduled flight to EPWA (flight LO 3924). There were 59 passengers and 4 crew members on the board.

During the climb, after setting the landing gear control lever in the UP position, the NLG was not retracted and the relevant signal lights indicated that it remained in the transitional position and the nose door (N DOOR) remained open.

The Captain decided to continue the flight to the destination.

During the landing approach in EPWA the crew extended the landing gear with the alternate system. MLG was extended and locked, while NLG did not change its position.

On EPWA the crew performed an emergency landing on RWY11 with NLG in the unlocked position. NLG collapsed during the landing roll. When the airplane came to rest on RWY11 at 19:19 hrs LMT the crew evacuated the passengers. None of the passengers or crew was injured during the evacuation. The airplane was damaged to the extent requiring repair.



Fig. 1. DHC-8-402 SP-EQG after emergency landing on EPWA RWY11.

1. NOTIFICATIONS AND REPORTS

On 11 January 2018 SCAAI sent Event Notification to: ICAO, EASA and TSB.

TSB appointed an Accredited Representative and his advisers from Transport Canada, Pratt & Whitney and Bombardier's Air Safety Investigation Office.

On 9 February 2018 SCAAI issued a Preliminary Report related to the accident.

2. RELEVANT INFORMATION

2.1. Direction of folding the strut

As part of the investigation, the Commission requested the Air Force Institute of Technology in Warsaw (ITWL) to carry out examination of the DSA kinematics and the damage to the DSA. As a result of the above examination, it was found that during retraction of the landing gear after take-off from EPKK, NLG DSA folded in aft direction, opposite to the intended by a designer (Figure 2-B).

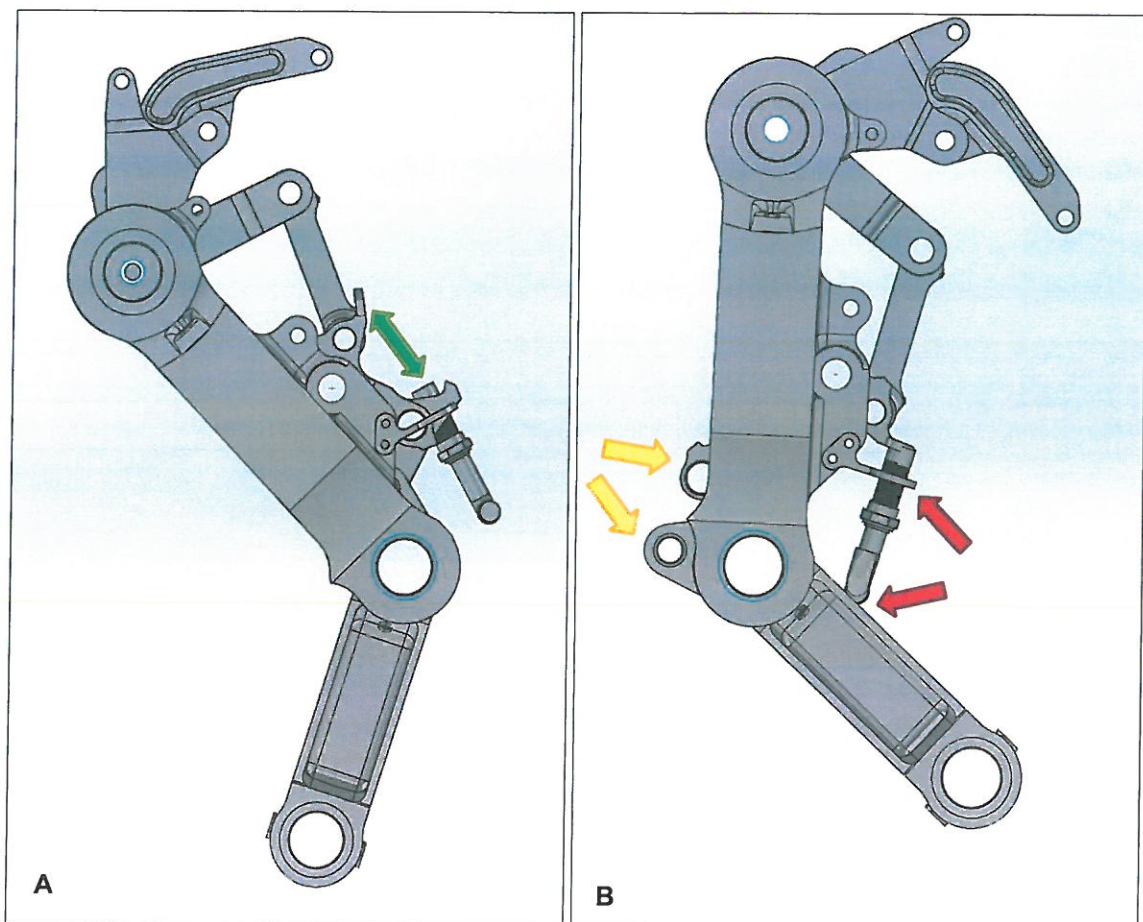


Fig. 2. NLG DSA in a transitional position during NLG retraction (side view): A - correct direction of the strut folding, B - reverse direction of the strut folding [source: ITWL expert opinion, figure modified by PKBWL].

In the figure above, the green arrows indicate NGLK2 PS face moving away from the target when DSA is folding in the right direction, the red arrows indicate collision areas

when DSA collapses in the opposite direction and the yellow arrows show disconnection of the link between the LLL and LDS (link which was damaged).

2.2. NLG maintenance

The only maintenance procedure directly related to NLG DSA is *LUB of the Nose Landing Gear* - Q 320001-201-A-00, performed every 6 months (MO) or 500 flight hours (FH).

The above maintenance procedure does not allow to determine the wear status of individual elements of NLG DSA. One of the parameters that could indicate the wear of the assembly parts could be values of backlash measured in some selected places.

The Commission asked the manufacturer/designer how to measure NLG backlashes, including NLG DSA. The answer was that the current AMM does not contain any data or requirements in this respect and during routine repair of DSA (every 60000 FH) all its parts are restored to the designed dimensions in accordance with CMM.

3. STATUS OF THE INVESTIGATION

At the moment, the investigation of the occurrence is in the phase of data analyzing and developing the Draft Final Report.

4. SAFETY RECOMMENDATIONS

The Commission has formulated three ad hoc safety recommendations which are currently being coordinated with the operator.

THE END

Investigator-in-Charge

PREWODNICZĄCY
Państwowej Komisji
Badania Wypadków Lotniczych

dr inż. Andrzej Lewandowski