Nr. I 13-03 / 05.08.2013

FINAL REPORT

Concerning the flight safety investigation
Of the serious incident
occurred at Iaşi Airport

<table>
<thead>
<tr>
<th>OPERATOR</th>
<th>TAROM</th>
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</thead>
<tbody>
<tr>
<td>AIRCRAFT</td>
<td>ATR 75-500</td>
</tr>
<tr>
<td>REGISTRATION</td>
<td>YR-ATH</td>
</tr>
<tr>
<td>TIME AND DATE</td>
<td>11,08,2012/18,56 GMT</td>
</tr>
<tr>
<td>LOCATION</td>
<td>IAŞI AIRPORT</td>
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</tbody>
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AKNOWLEDGEMENT

This REPORT presents data, analysis, conclusions and recommendations concerning the civil aviation safety, issued by the Civil Aviation Safety Investigation Commission appointed by the General Director of the Civil Aviation Safety Investigation and Analysis Center.

The civil aviation safety investigation was conducted in accordance with the provisions of the Government Ordinance No. 51/1999 concerning the technical investigation of civil aviation accidents and incidents, approved with amendments and additions by Law No. 794/2001, of the REGULATION (EU) No. 996/2010 of the European Parliament and of the Council from 20 October 2010 on the investigation and prevention of accidents and incidents occurred in civil aviation and repealing of Directive 94/56/EC and the provisions of Annex 13 to the Convention on International Civil Aviation signed at Chicago on 7 December 1944.

The sole objective of civil aviation safety investigation is preventing the occurrence of accidents and incidents, by effective determination of causes and circumstances that led to this occurrence and establishing the necessary recommendations for civil aviation safety and it HAS NOT THE PURPOSE of finding guilty, individual or collective responsibilities.

As a consequence, the use of this REPORT for other purposes than preventing the occurrence of accidents and incidents might generate misinterpretations.
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SYNOPSIS

CLASSIFICATION: Serious Incident

Operator: TAROM

Aircraft: ATR 72-500

Registration: YR-ATH

Date and time: 11.08.2012 / 19:25 LT

Location: IASI Airport, RWY 15

When landing at Iasi Airport, the aircraft that was performing a flight Bucharest – Jassy, after touch-down, during speed reduction, the aircraft overrun the runway edge to left, on the grass surface of the runway strip.

The incident had no technical consequences and no victims resulted.

The occurrence was notified in written to CIAS, the ASR being registered with no. 6196/13.08.2012. The civil aviation safety investigation is conducted according to the provisions of the Government Ordinance No. 51/1999 concerning the technical investigation of civil aviation accidents and incidents, approved with amendments and additions by Law No. 794/2001, of the 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 occurred in civil aviation and repealing of Directive 94/56/EC, and according to the provisions of Annex 13 to the Convention on International Civil Aviation, signed at Chicago on December 7, 1944.
PRELIMINARY INFORMATION

1.1 History of the incident

On 11.08.2012, the aircraft type ATR 72 - 500, registered YR - ATH, made the flight ROT 709, on the route LROP – LRIA (Otopeni – Iasi).

At 19:12 UTC the captain requested the approval to descent to level 50, towards the point SOLGA. TWR IASI approved the descent to level 50, for the runway 15 and visual approach. The flight went normally until the aircraft took contact with the runway.

After touch-down, during the speed reducing process, the aircraft deviated to the left and overrun the runway edge, on the grassy-surface of the runway strip. It reentered on the concrete runway, after running almost 250 meters.

The captain informed TWR and requested an exterior visual control. After the requested control, not being found damages, the aircraft taxied normally, to the landing platform.

The passengers and the crew on - board of the aircraft were not affected by this occurrence.
1.2 Victims

N/A.

1.3 Damage to the aircraft

The exterior tire main left landing gear was superficially cut. For safety reasons as a result of discussions with the aircraft manufacturer, the tires of the main left landing gear and of the nose landing gear, were replaced.

1.4 Other damage

A lamp of runway lighting system was broken.

1.5 Crew information

<table>
<thead>
<tr>
<th>Pilot (captain)</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>License</td>
<td>RO /ATPL/A</td>
</tr>
<tr>
<td>Medical certificate</td>
<td>Available until 31.07.2013/CL.1 and 31.07.2017/CL.2</td>
</tr>
<tr>
<td>Flight experience</td>
<td>2.900 FH/ 2.300- ATR</td>
</tr>
<tr>
<td>Work time</td>
<td>Aprox. 2 hours</td>
</tr>
<tr>
<td>Rest time</td>
<td>More than 8 hours</td>
</tr>
</tbody>
</table>
1.6 Aircraft information

After replacing the tire from the left landing gear, the aircraft was moved in flight to the technical basis of the operator. The aircraft was subject to a detailed technical inspection in order to return it to the operation. The replacement of some components was made at the recommendation of the manufacturer's technical assistance department.

1.7 Meteorological information

Metar LRBC 111900Z 22004KT 200V260 9999 SHRA SCTO45CB 17/16 Q1016
TAF LRIA 111700Z 1118/1203 VRB04KT 9999 SCT040 CB TEMPO 1118/1122 5000
SHRA BECMG 1122/1124 5000 RA SHRA BKN015 SCTO 30 CB TEMPO 1200/1203
3000 TSRA BKN010 BKN025CB
Wind from 280º with 10 kts.

1.8 Navigation Aids

The navigation aids functioned normally.

1.9 Communication

The communication aids functioned normally.
1.10 Aerodrome Data

The aerodrome is certified by AACR through the certificate no. AAP 10/2012, issued on 04.04.2012.

1.11 Flight recorders

The information on the flight data and voice recorders of the aircraft was decoded and processed.

1.12 Wrack and impact information

N/A.

1.13 Medical and pathological information

N/A.

1.14 Fire

N/A.

1.15 Surviving information

N/A.

1.16 Tests and research

N/A.

1.17 Management and organization information

N/A.

1.18 Additional information

N/A.

1.19 Investigation techniques

N/A.
2 ANALYSIS

On 11.08.2012, the aircraft YR-ATH, type ATR 72-500, during the landing procedure, after the touch-down, did not maintain the landing heading, overrun the runway, leaving the runway on the left side, the whole aircraft exiting the runway, after which it returned to the runway. After returning to the runway, the crew stopped the aircraft and requested a visual control of the ground guidance service of the airport.

After the control, taking into account that it wasn’t subject to any damage, the aircraft rolled to the apron, the passenger disembarking normally.

The analysis of the radio communication shows that the passengers did not feel this occurrence.

At landing the runway was wet with ponds standing water areas, which may have differently affected the tires adherence. Landing was made on the magnetic heading 150° with wind from the rear hemisphere with intensity of 10 kts.

At the moment of exiting from the runway, the main left landing gear passed over a lamp of the runway lighting system, with the exterior tire, causing damage to the rubber without losing the tire pressure. It is estimated that the distance ran on the runway strip from the exit moment until the return moment, was of almost 250 m.

The investigation commission, analyzing the recorded values of the landing heading, estimates that the aircraft landed on the magnetic head 150°, with the runway center line in the right side. We consider that this touch-down position, would allow, without a major modification of the direction, a smooth exit from the runway.

From the moment the main left landing gear entered the runway strip there were created additional friction conditions on the left side favoring the deviation and exit of the aircraft from the runway, especially since the runway was wet, which we can assume that allowed the appearance of the aquaplaning phenomenon of the tire remained on the runway surface.

Analyzing the recording, it is estimated that the speed parameters, lowering rate, heading, flaps position were correct, but taking into account the weather conditions and the fact that the landing was made during the night, the pilot chose to land closer to the lamps of the lighting on his side. This could be a possible explanation, why the aircraft landed on the left of the runway axis. In order to touch the lamp of the lighting, given that the aircraft would have perfectly landed in the runway center line, it should have appeared, in FDR data, a heading of almost 110°.
values which hasn’t been reached, the variation of the landing heading being of maximum $\pm 10^\circ$.

During the occurrence the crew kept its calm, solving correctly the situation they have created, and after returning on the runway, we consider that they acted correctly by stopping the aircraft and requesting assistance for the exterior visual inspection of the aircraft.
3 CONCLUSIONS

3.1 Findings

1. The landing was made during the night, on a wet runway.
2. The aircraft landed on the correct magnetic heading, but with the runway center line to the right.
3. The runway exit was favored by maintaining the left rudder pedal command, with a higher thrust on engine 2 and a wet runway.
4. The runway of Iasi Airport doesn’t have axial lighting.

3.2 Causes of the occurrence

1. Error in the flying technique, due to the misinterpretation of the weather conditions influence from the landing moment, on the aircraft trajectory.
2. Favoring cause: Lack of the central line lighting.

4 RECOMMENDATION

1. We recommend that the involved crew, during the training in the flight simulator, to focus on landing during the night, with wind from the back hemisphere, including for the conditions similar to this incident.
2. The aerodrome operator of Iasi Airport will analyze the possibility of installing a lighting system that includes also the lighting of the runway axis.

Note: The documents and the analysis objects used for the elaboration of the Investigation Report are confidential and they are stored at CIAS, according to the legal provisions.