

FINAL REPORT

of

the investigation of a serious incident that occurred on 26.11.2017 with aircraft ATR 72-202, registration YU-ALO, used by air operator “AIR SERBIA”, during the initial climb after take-off from Sofia Airport



2019

Purpose of the Report and responsibility

In accordance with Annex 13 to the Convention on International Civil Aviation of 7 December 1944, Regulation 996/2010 of the European Parliament and the Council on the investigation and prevention of accidents and incidents in civil aviation and Ordinance 13 of 27.01.1999 of the Ministry of Transport, Information Technology and Communications, the objective of the aviation occurrence investigation is to establish the causes that have led to its realisation in order these to be eliminated and not allowed in the future without apportioning blame or liability.

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01. List of the abbreviations used

AO	- Air Operator;
AS	- Airspace;
DG CAA	- Directorate General “Civil Aviation Administration”;
AC	- Aircraft crew;
CAA	- Civil aviation act;
AMRAID	- Aircraft, Maritime and Railway Accident Investigation Directorate;
MTITC	- Ministry of Transport, Information Technology and Communications;
ATS	- Air Traffic Services;
CAMO	- Continuing Airworthiness Management Organization;
FL	- Flight level;
IFR	- Instrument flight rules;
RWY	- Runway;
ATCO	- Air Traffic Controller;
AOC	- Air Operator certificate;
AAIU	- Aircraft Accident Investigation Unit;
TLB	- Technical log book;
ATIS	- Automatic terminal information service;
ALT	- Altitude;
ATPL	- Airline transport pilot licence;
DFDR	- Digital Flight Data Recording;
EASA	- European Aviation Safety Agency;
FOM	- Flight Operations Manual
FCOM	- Flight Crew Operating Manual;
FCTM	- Flight Crew Training Manual;
TORQ ENG1	- Torque engine 1;
FDR	- Flight Data Recorder;
MAG HDG	- Magnetic heading;
FL	- Flight level;
VERT ACC	- Vertical acceleration;
GAT	- General Air Traffic;
GW	- Gross Weight;
ICAO	- International Civil Aviation Organization;
IAS	- Indicated airspeed;
PICH ATT	- Pitch attitude;
LBSF	- Sofia Airport
METAR	- Meteorological Aerodrome Report;
MSN	- Manufacturer Serial Number;
MTOW	- Max Take Off Weight;
NM	- Nautical Mile;
ROLL ATT	- Roll attitude;
PIC	- Pilot in Command;
QAR	- Quick Access Recorder;
UTC	- Coordinated Universal Time;
V/S	- Vertical speed.

1 Introduction

Date and time of air occurrence: 26.11.2017, 16:06 h local time (14:06 h UTC).

Notified: Aircraft, Maritime and Railway Accident Investigation Unit Directorate (AMRAIU and General Directorate Civil Aircraft Administration at the Ministry of Transport, Information Technology and Communications (MTITC) of the Republic of Bulgaria, the European Commission, the International Civil Aviation Organization (ICAO), the National Bureau of Aviation Occurrences Investigation (BEA) of the Republic of France, European Air Safety Agency (EASA) and the Centre for Investigation of Accidents in Transport of the Republic of Serbia.

On the grounds of article 9, paragraph 1 of Ordinance No. 13 dated 27.01.1999 on the investigation of aircraft accidents, this event has been classified by the Aircraft Accident Investigation Unit (AAIU) of AMRAID of MTITC as a serious incident. The materials about the aircraft incident have been registered as Case No. 08/26.11.2018 in the archives of the AAIU.

On the grounds of article 5, paragraph 1 of Regulation (EC) regarding the investigation and the prevention of civil aviation accidents and incidents, article 142, paragraph 2 of the Civil Aviation Act (CAA) of the Republic of Bulgaria dated 01.12.1972 and article 1, paragraph 1 of Ordinance No. 13 of the Ministry of Transport dated 27.01.1999 on the investigation of aircraft accidents, by means of Order No. RD-08-509/11.12.2017 of the minister of transport, information technology and communication, a Commission is appointed for investigation of the serious incident.

The difference between the local and universal coordinated time is 2 hours. All the times contained in the report are local times.

Summary: On 26th November 2017 "Air Serbia" aircraft ATR 72-202 registration YU-ALO flying from Sofia to Belgrade with 36 passengers on board and 4 crew members took off from Sofia Airport. During the initial climb, at a height between 8000 and 10000 ft, the crew heard a loud clattering noise and felt vibrations as a result the crew decided to return and land at Sofia Airport. The aircraft landed safely at 16:21. After landing, it was found that a panel from the central part of the wing to fuselage fairing was missing. There were no injuries to the passengers and the crew.

Reasons for the occurrence of the serious incident:

The incorrect screwing up of the bolts used for the 291 BL panel attachment during planned technical servicing performed by the staff maintaining the aircraft.

2 Factual information

2.1 Flight history

2.1.1 Flight number, type of operation, last point of departure, time of departure, destination point of intended landing:

Flight number: JU123.

Type of operation: Commercial Air Transport (Passenger)

Last point of departure: Sofia Airport (LBSF).

Time of departure: 16:00 h local time.

Destination point of the intended landing: Belgrade Airport (LYBE).

2.1.2 Flight preparation and description of the flight

On 26th November 2017 "Air Serbia" aircraft ATR 72-202 registration YU-ALO performed a scheduled flight transporting passengers from Belgrade to Sofia. In accordance with the explanations of the crew, the flight from Belgrade was without an incident. According to the entry made in the technical log book of Aircraft № 8013927, the landing at Sofia Airport was at 15:16 h. No problems occurring during the flight have been registered in the log book. The arriving passengers disembarked and the departing passengers boarded the aircraft. A Transit Check of the aircraft was performed and during the inspection no faults were detected. At 16:00 h the aircraft took off performing a flight from Sofia to Belgrade. During the initial climb, at a height between 8000 and 10000 ft, the crew heard a loud clattering noise and felt vibrations as a result. The senior flight attendant informed the flight crew that she had also heard this unusual noise and had also felt shaking in the upper section of the cabin of the aircraft. At the time of the incident, the commander was the pilot flying and the aircraft was in a clean configuration. At 16:06 h, the crew made a request to ATC to stop climbing and to be

vectored back to Sofia Airport. The crew assumed that there was a detached panel or problems with the nose landing gear, without having any indications of that. At about 16:12 h, the crew requested a longer approach since they had doubts regarding the condition of the nose landing gear. The airport emergency services were alerted. The aircraft was guided by vectors to intercept the final approach 15 nm from the runway threshold. At 16:17 h, the crew reported safe landing gear down indication, including the nose landing gear and the aircraft touched down normally on Runway 27 at 16:21. There were no injuries to the passengers and the crew. The aircraft was parked on a parking stand. After an inspection of the plane, conducted at the parking stand, it was found that a panel from the central part of the wing to fuselage fairing was missing. A photo of this section of the plane is shown in figure 1.



Figure1

During the inspection of the taxiways, the runway, the grass-covered areas adjacent to the taxiways and the runway in the direction of the taxiing and the takeoff of the plane, conducted by Sofia Airport officials, the missing panel was not found.

2.1.3 Location of aviation occurrence

The serious incident occurred during the initial climb, 6 min after the aircraft took-off from Sofia Airport, conducting a flight from Sofia to Belgrade. The serious incident occurred during the day light – 16:06 h local time.

2.2 Injuries to persons

Injuries	Crew members	Passenger	Total number of occupants	Others
Fatal	0	0	0	0
Serious	0	0	0	0
None	4	36	0	0
Total	4	36	0	0

No injuries of crews, passengers or other persons in result of the air occurrence.

2.3 Damage to aircraft

During the inspection of the aircraft implemented after the serious incident, no other damages in addition to the missing panel were found (Figure 1).

2.4 Other damages

No other damages.

2.5 Personnel information

2.5.1 Commander

Male, aged 57;

Qualification Certificate: Airline Transport Pilot License ATPL(A), issued by CAD (Civil Aviation Directorate) of the Republic of Serbia. Class/type - ATR 42/72. Date of the last inspection – 1.04.2017, valid until 30.06.2018. The aircraft commander has a medical exam class 1, valid until 18.12.2018. At the time of the occurrence, the pilot's medical certificate was valid.

Flight experience:

Total flying experience:	10500 flight hours;
Total Experience on type:	7500 flight hours;
Total flying experience during the last 24 Hours:	2:56 Hrs
Total flying experience during the last 30 Days:	18:41 Hrs
Total flying experience during the last 90 Days:	36:22 Hrs
Rest period during the last 24 Hours:	16:00 Hrs

The commander was a pilot in command of the preceding flight from Belgrade to Sofia

The investigation commission think that the commander has the necessary qualification and experience to perform the functions assigned to him.

2.5.2 Co-pilot

Male, aged 29;

Qualification Certificate: Airline Transport Pilot License ATPL(A), issued by CAD (Civil Aviation Directorate) of the Republic of Serbia. Class/type - ATR 42/72. Date of the last inspection – 12.08.2017, valid until 31.08.2018. The copilot has a medical exam class 1, valid until 10.04.2018. At the time of the occurrence, the pilot's medical certificate was valid.

Flight experience:

Total flying experience:	1900 flight hours;
Total Experience on type:	1700 flight hours;
Total flying experience during the last 24 Hours:	2:48 Hrs
Total flying experience during the last 30 Days:	35:43 Hrs
Total flying experience during the last 90 Days:	67:15 Hrs
Rest period during the last 24 Hours:	19:00 Hrs

The co-pilot was pilot not flying of the preceding flight from Belgrade to Sofia.

The investigation commission think that the co-pilot has necessary qualification and experience to perform the functions assigned to him.

2.6 Aircraft information

2.6.1 Airworthiness

The aircraft ATR 72-202, registration YU-ALO, serial number 186, was manufactured by ATR-GIE – the Republic of France on 19.09.1990. The plane is owned by "Air Serbia", address NOVI BEOGRAD, Juriša Gagarina 12. It has a valid Certificate of registration №1608, issued by Civil Aviation Directorate of the Republic of Serbia on 19.01.2015. The aircraft has been written into the Air Operator Certificate of "AIR SERBIA AD BEOGRAD", holder of AOC (Air Operator Certificate) № RS-001 revision 14 of 2017. The aircraft aviation noise certificate №1608 was issued on 15.09.2010. This certificate contains information that the maximum takeoff weight (MTOW) is 21500 kg and the maximum landing weight is 21350 kg. The aircraft is fitted with two turboprop engines, type PW-124B (Pratt Whitney Canada), maximum power – 2480 horsepower each, and 2 propellers type Hamilton Standard (14 SF-11). By the date of the serious incident, the aircraft had logged 41574 flight hours and 42 min with 38973 cycles. The last Weekly Check of the aircraft was made on 25.11.2017 and written into Technical Log Book № 8013926. The aircraft ATR 72-202, registration YU-ALO, conducting a scheduled flight transporting passengers from Belgrade to Sofia landed at Sofia Airport at 15:16 h. A transit check was made on the aircraft, which was written into the Technical log book, as the conclusion of this examination was that the aircraft was ready for the

next flight. The inspection was conducted for a short period of time during the stay of the aircraft at Sofia Airport. In addition to the replacement of the missing panel from the central part of the wing to fuselage fairing, certain technical servicing procedures, stipulated in paragraph 2.17, were performed on the aircraft.

2.6.2 Aircraft characteristics

ATR 72-202, registration YU-ALO, serial engine 186, is a twin-engine, high-wing turboprop passenger aircraft with a short range. The aircraft is fitted with turboprop engines type PW-124B. The main features of the aircraft are:

- Length – 27.2 m.
- Wingspan – 27.0 m.
- Height – 7.6 m.
- Maximum takeoff weight – 21500 kg.
- Empty weight – 12400 kg.
- Range with maximum load – 1195 km.
- Maximum cruising speed - 460 km/h.
- Maximum operating altitude – 7600 m.

2.6.3 Information on the fuel used

In accordance with the technical logbook № 8013927, dated 26.11.2017, ATR 72-202 landed at Sofia Airport with remaining fuel quantity – 1880 kg, type JET A-1. In accordance with the technical logbook № 8013928, dated 26.11.2017, there was no refuelling at Sofia Airport. The aircraft took off from Sofia Airport at 16:00 hrs, destination – Belgrade Airport. Owing to a technical problem, the aircraft landed back at Sofia Airport at 16:21 h. After landing, an entry was made in the technical logbook № 8013928, dated 26.11.2017, stating the remaining fuel quantity – 1680 kg of JET A-1.

2.7 Meteorological information

2.7.1 Weather at the time and location of the occurrence

Bulgaria was in the warm sector of a Mediterranean cyclone approaching the Balkan peninsula. Associated with this system relatively warm air was moving from the southwest, and the weather on 26.11 was characterized by the creation of inversion, low clouds formation and reduced horizontal visibility. The minimum horizontal visibility reported during the period under consideration was 5000 m.

2.7.2 Weather forecast data METAR about Sofia Airport at 13:00-15:00 UTC

LBSF 261300Z VRB01KT CAVOK 09/05 Q1015 NOSIG=
LBSF 261330Z VRB02KT 9000 NSC 09/05 Q1014 NOSIG=
LBSF 261400Z VRB02KT 9000 NSC 08/04 Q1014 NOSIG=
LBSF 261430Z 12003KT 8000 NSC 08/04 Q1014 NOSIG=
LBSF 261500Z VRB02KT 5000 BR NSC 08/05 Q1014 TEMPO 3000 BR=

2.7.3 Automatic Terminal Information Service (ATIS) Sofia Airport – ATIS

2017-11-26 14:00:03 UTC

- This is Sofia information T
- ATIS Report at 1400Z
- ILS Z approach.
- Runway in use 27
- Flock of birds in VC of the RWY, ALT unknown.
- Transition Level 140
- TWY F is closed.
- TDZ VRB BTN 070/ AND 160/2KT
- 9KM
- NSC

- Temperature 8
- Dewpoint 5
- QNH 1014 hPa
- TREND NOSIG
- Inform Sofia Approach - Info T

The meteorological conditions at the time of the flight had no effect on the serious incident.

2.8 Aids to navigation

The aircraft performed the flight with the standard navigation equipment of the aircraft ATR 72-202. There were no reported about technical failures of the navigation equipment of the aircraft. The approach to RWY 27 at Sofia airport from flight JU123 is carried out under the ILS instrumental landing system, which is CAT 1, as described in the Aeronautical Information and Publication (AIP) of the Republic of Bulgaria.

In the day-to-day information of ATS Sofia, there are no refusals of technical means that directly affect the operational activity at the moment of the event.

2.9 Communications

The air-ground radio communication between the flight crew and ATCO-Tower at LBSF was carried out at the frequency of 118,100 MHz. The Investigation Commission found that there had been no loss of radio communication and there had been no interruptions and disturbances of the radio broadcasting.

2.10 Airdrome information

Aerodrome Location Indicator and Name – LBSF -Sofia;

Aerodrome Reference Point (ARP) coordinates and site at aerodrome - N42°41'42" E023°24'30", RWY centre;

Elevation - 1742 ft (531 m);

Designations / RWY 09/27 - MAG 091°/271°;

Dimensions of RWY (m) - 3200 x 45 m;

2.11 Flight data recorders

The ATR 72-202, registration YU-ALO, engines start up procedure began at 15:50 hrs, as first engine № 2 was started up and then engine №1. According to the readout of the Quick Access Recorder (QAR), ATR 72-202, registration YU-ALO, took off at 16:00 hrs at a Indicated Air Speed IAS=124,3 kts. At an altitude of ALT=3072 ft the aircraft set MAG HDG = 330° torque of the engines – TORQ ENG1 = 89,5% and TORQ ENG2 = 89,5%. At 16:06 hrs, during the climb on HDG=330° and at ALT=7552 ft, IAS=169,5 kts, PITCH ATT=5,63°, ROLL ATT = -0,7°, vertical acceleration VERT ACC = 1,03 g, torque of the engines – TORQ ENG1 = 97,3% and TORQ ENG2 = 97%, panel 291 BL detaches from the central part of the wing to fuselage fairing of the aircraft. At 16:08 hrs, at ALT = 1048 ft, the aircraft started descending, with TORQ ENG1 = 26,3%; TORQ ENG2 = 26,3%; PITCH ATT = 0,7° ROLL ATT = 3,87°. The aircraft landed at 16:21h at a landing speed IAS = 113,8 kts and VERT ACC = 1,02 g. At 16:25 hrs, engine №1 was shut down followed by engine №2.

The main parameters of the flight are graphically illustrated in Figure 2 and Figure 3.

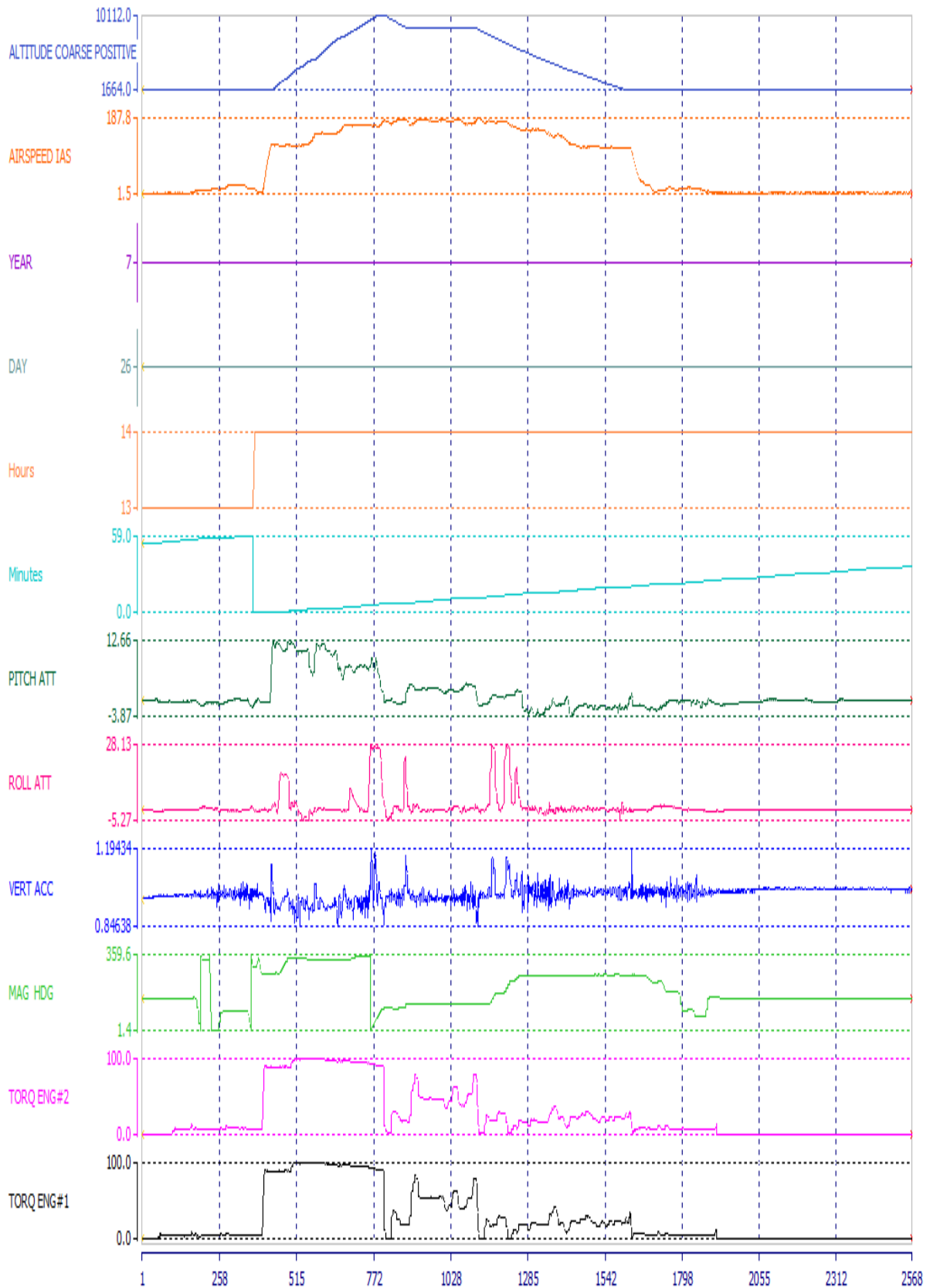


Figure 2

ATR72-202 SN-186

FDAU36045182A13

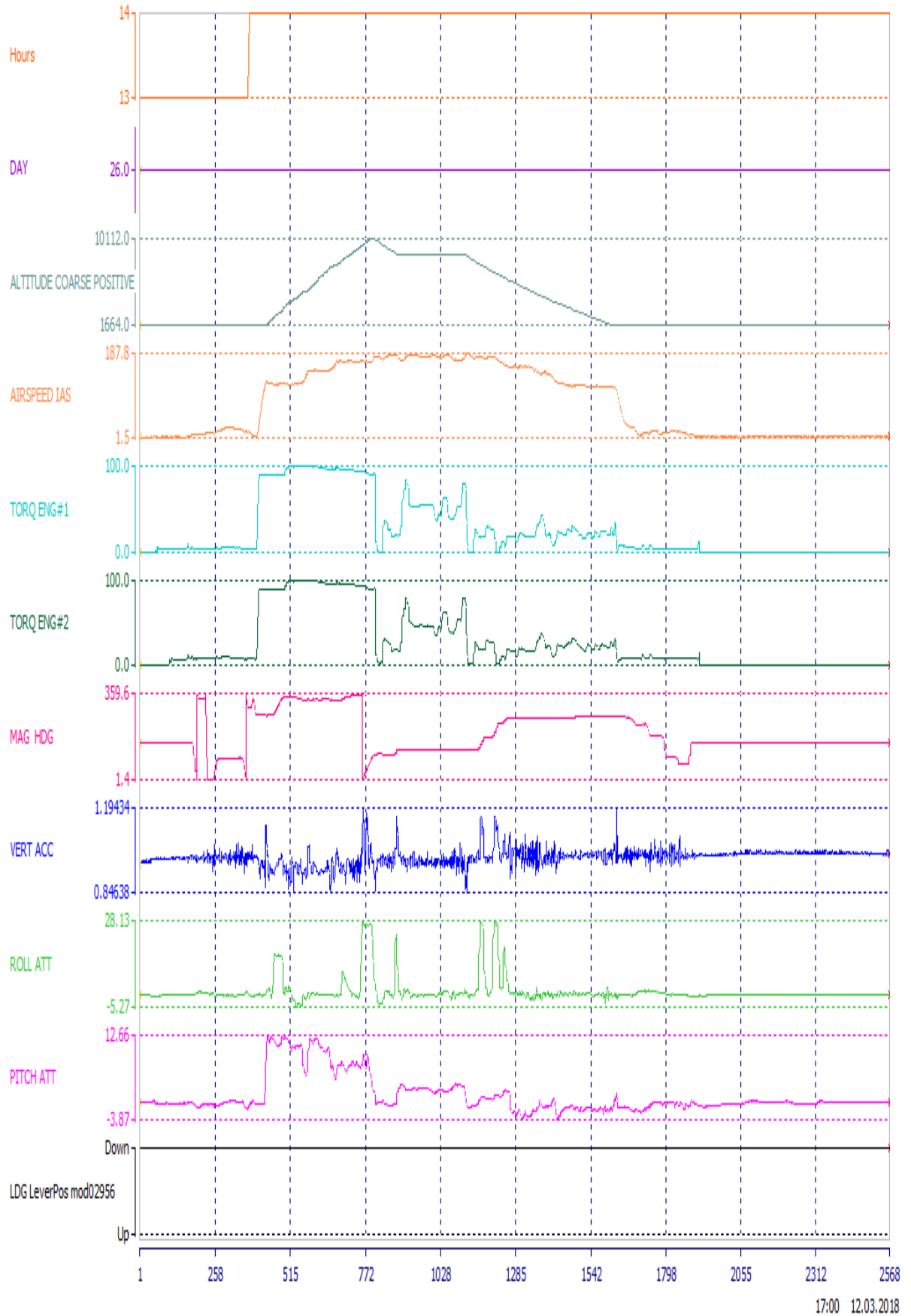


Figure 3

2.12 Wreckage and Impact Information

There were no damage to either the aircraft or to any ground facilities.

2.13 Medical and Pathological Information

No people have been injured during this serious incident, as a result of which no medical and pathological examinations were performed.

2.14 Fire

No fire initiated during the occurrence

2.15 Survival aspects

No emergency rescue equipment was used by the passengers and the crew.

2.16 Tests and research

The following activities were conducted for the purpose of the investigation:

1. Inspection of aircraft ATR 72-202, registration YU-ALO, serial number 186, during which it was found that a panel (291 BL) from the central part of the wing to fuselage fairing was missing. A photo of this section of the plane was shown in figure 1;
2. Inspection of the taxiways, the runway, the grass-covered areas adjacent to the taxiways and the runway in the direction of the taxing and the takeoff of the aircraft, conducted by Sofia Airport officials;
3. An inquiry of the crew of ATR 72-202;
4. An inquiry of the maintenance personnel B1/B2 from the technical servicing department "Aero Technic BG", which provided technical assistance during the replacement of the missing panel of the aircraft with a new one;
5. Study and analysis of the technical publication of the aircraft;
6. Study and analysis of documents related to the qualification and the experience of the two pilots;
7. Assessment of the flight characteristics of the aircraft;
8. Logical and probability analysis of the possible reasons for the occurrence of the serious incident.

References:

Item 1 – the results obtained from the conducted inspection of the aircraft after the serious incident have been included in paragraph 2.3.

Item 2 – the results obtained from the conducted inspection of the taxiways, the runway, the grass-covered areas adjacent to the taxiways and the runway in the direction of the taxing and the takeoff of the aircraft have been included in paragraph 2.1.2.

Item three – the results obtained from the inquiry of the crew of aircraft ATR 72-202, registration YU-ALO, have been included in paragraph 2.1.2.

Item four – the results obtained from the inquiry of the maintenance personnel of the technical servicing department "Aero Technic BG" have been included in paragraph 2.17.

The study and the analysis of the documents related to the registration and the airworthiness of the aircraft have been included in paragraph 2.6.1.

The study and the analysis of the documents related to the qualification and the experience of the two pilots have been included in paragraph 2.5.

The logical and probability analysis of the possible reasons for the occurrence of this serious incident has been made in chapter 3 of this report.

2.17 Additional information

The serious incident occurred with aircraft ATR 72-202 while it was conducting a scheduled flight from Sofia to Belgrade. The aircraft is used by Air Operator „AIR SERBIA AD BEOGRAD", holder of AOC (Air Operator Certificate) № RS-001 revision 14 of 2017.

As a result of the secondary visual inspection conducted on aircraft ATR 72-202, in the area of

attachment of the missing aerodynamic panel, it was found that there was only one of the nine bolts attaching the panel. The technical servicing department "Aero Technic BG" has a contract with Air Operator "Air Serbia" for the provision of technical assistance. After the replacement of the missing panel of the aircraft with a new one, the following procedures were performed at Sofia Airport:

- Visual inspection Vertical and Horizontal stabilizers for mechanical damage, visual inspection of Aerodynamic fairings in affected zone and inspection of compartment underneath of affected panel;
- Operational Test of Rudder control and spring tab JIC: 27-20-00-OPT 10000-001;
- Operational Test of Centering Unit JIC: 27-21-33-OPT 10000-002;
- Operational Test of Elevator Controls and tabs JIC: 27-30-00-OPT 10000-001;
- Operational Test of Stall Warning and stick pusher JIC: 27-36-00-OPT 10000-001;
- Installed upper wing surface panel JIC: 59-93-00 RAI 10000;

Service bulletin (ATR 72-53-1044) was implemented on aircraft ATR 72-202, registration YU-ALO, serial number 186, in order to replace the hinge nests in which the aforementioned bolts are placed. See figure 4 and figure 5. On the day of the implementation of the service bulletin, the aircraft had flown 3927 hrs 35 min with 4031 cycles.

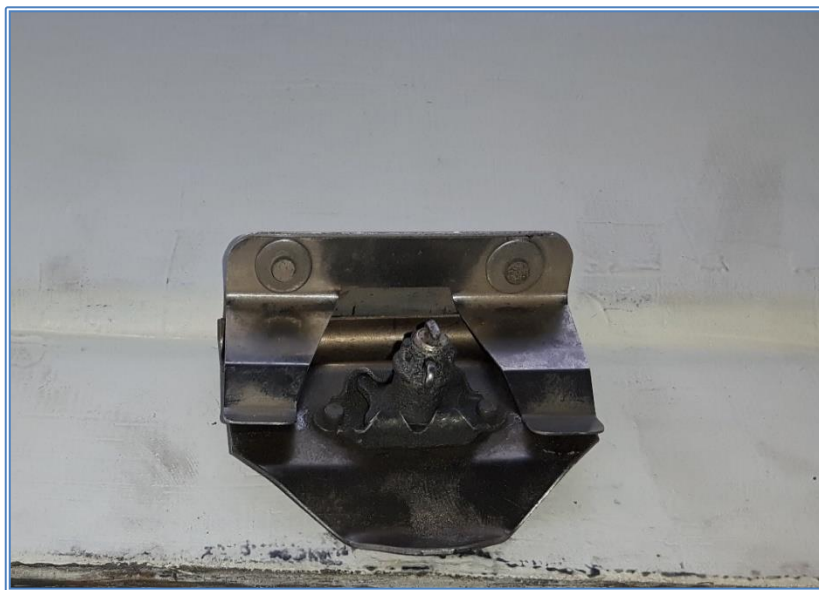


Figure 4



Figure 5

Considering the assembly and disassembly history of panel (291 BL), which has been written in the technical documentation of the plane, it was found that the last maintenance activity at the technical

servicing department of Air Operator "Air Serbia" was performed on 15.03.2017 in accordance with regulatory document WO-932255. There were also a few maintenance activities conducted at the technical servicing department of Air Operator "Air Serbia" on aircraft ATR 72-202, registration YU-ALO, serial number 186, related to the disassembly of a panel (291 BL):

1. On 18.08.2017, panel 292 CR (located next to panel 291 BL) was disassembled in order to be painted in accordance with regulatory document WO-2000509. In order to disassemble a panel 292 CR, as it was in this case, for the purpose of painting it, it was necessary to disassemble one or several adjacent panels. Panel 291 BL is adjacent to panel 292 CR, which suggests that it had also been disassembled;

2. On 04.10.2017, replacement was made of a detector of the anti-icing system of the leading edge of the aircraft wing (LH De-icer boot) in accordance with regulatory document WO-2050868;

3. On 09.10.2017, an inspection was made of a detector of the anti-icing system of the leading edge of the aircraft wing (LH De-icer boot) as well as covering of the rubber seals with graphite grease in accordance with regulatory document WO-2053858;

4. According to the technical service department of "Air Serbia", the working cards for assembly and disassembly of the respective panels contain information that the tightening torque of the bolts attaching the respective panels to the fuselage of the plane shall be 0.55 and 0.65 daN. However, there is also information that the protuberance of the bolt heads means that the bolts have not been sufficiently tightened.

3 Analysis

Considering the information in chapter 1, we can draw the conclusion that the emergency landing of the aircraft at Sofia Airport was caused by the detachment of a panel from the central part of the wing to fuselage fairing of the aircraft.

There is a strong likelihood that the vibrations on the pedals of the aircraft were not caused by a collision of the detached panel with the tail of the aircraft. The vibrations were caused by the generation of turbulent airflow passing through the missing panel located in the central section in front of the tail of the aircraft. This is confirmed by the fact that there are no damages on the fuselage, the vertical and the horizontal stabilizers and the respective flight control surfaces of the aircraft as a result of the detachment of panel 291 BL from the central section of the aircraft. After landing at Sofia Airport, an inspection of the aircraft was made by a team of Swissport and MCC Aero Technic BG, stipulated in paragraph 2.17.

Considering the fact that there are no structural damages at the points of attachment of the missing panel, we can conclude that it was had been incorrectly mounted. Owing to the fact that there is no evidence of any broken bolts or twisted points of their fixing, we can draw the conclusion that not all the bolts had been tightened and some of them were missing.

4 Conclusion

4.1 Findings

As a result of the investigation conducted by the commission, the following deductions were made:

1. Aircraft ATR 72-202, registration YU-ALO, serial number 186, was manufactured by ATR-GIE-the Republic of France on 19.09.1990.
2. The plane has Registration Certificate №1608 issued by the Civil Aviation Directorate of the Republic of Serbia on 19.01.2015.
3. The plane was written into the Air Operator Certificate of "AIR SERBIA AD BEOGRAD", holder of AOC (Air Operator Certificate) № RS-001 revision 14 of 2017.
4. The plane has two turboprop engines type PW-142B (Pratt Whitney, Canada), with maximum power 2480 horsepower each, and 2 propellers type Hamilton Standard (14 SF-11).
5. During a flight, a panel was detached from the fuselage at the place of the attachment to the central part of the wing to fuselage fairing (291 BL). The panel and its location after the detachment were not found.
6. The period of time between the touchdown at Sofia Airport and the moment when the aircraft was airborne taking off from Sofia Airport was 44 min. According to technical log book №

8013927 dated 26.11.2017, aircraft ATR 72-202, registration YU-ALO, after the flight BEG-SOF landed at Sofia Airport (15:16 h). The aircraft took off from Sofia Airport at 16:00 h, which was written into technical log book № 8013928, dated 26.11.2017. Within that period of time, the passengers disembarked the plane and the cargo was unloaded, a transit check was made as well as a pre-flight inspection and internal checks.

7. No structural damage of the aircraft was found in result of the panel 291 BL detachment.
8. There is no information about any faults concerning the functioning of the aircraft control system.
9. There is no information that any physiological factors or inabilities were affecting the working capacity of the pilot flying.
10. The weather conditions did not affect directly the occurrence of the serious incident.

4.2 Causes

On the grounds of the analysis conducted, the commission hereby states that this serious incident occurred as a result of:

The incorrect screwing up of the bolts used for the 291 BL panel attachment during planned technical servicing performed by the staff maintaining the aircraft.

5 Safety Recommendations

Taking into consideration the reasons for the occurrence of this serious incident, the commission recommends implementing the following measures to ensure the safety of the flights:

BG.SIA-2017/08/01. The manufacturer to issue a Service bulletin and propose to the AOs operating airplane ATP 72-202 to include in the airplane's Technical Servicing Programme the requirement after any activity involving dismantling and assembling of 291 BL panel, to inspect the bolts and the nests used for its fixing, which to be recorded into the worksheets.

BG.SIA-2017/08/02. CAD (Civil Aviation Directorate) of the Republic of Serbia shall require the "Air Serbia" Air Operator to set up and include into the FOM a minimum period of time for doing a Pre-flight inspection and a Transit check at an intermediate airport.

Note: Copies of the Draft Final Report were submitted to the countries concerned in accordance with paragraph 6.3 of Annex 13. A representative of the BEA, France, made notes on the draft. These are attached to the investigation materials. The Safety Investigation Commission accepts as editorial the notes given in points 1 to 4 of Table 1 and in parts A to E of Table 2 and includes them into the Final Report. The note in point 5, Table 1, related to recommendation BG.SIA-2017/08/01, led to a change of the recommendation in the Final Report.

On the grounds of Art. 18, § 5, of Regulation 996/2010, the radiated safety recommendations will be recorded in the centralized European SRIS (Safety Recommendations Information System) system.

The Investigation Commission reminds all organizations to which safety measures have been sent, that on the basis of Article 18 of Regulation 996/2010 on Investigation and Prevention of Accidents and Incidents in Civil Aviation and Art19, Para7 of Ordinance No. 13 for investigation of aviation accidents, that are obliged to notify in writing the Directorate AMRAIUD of MTITC for the actions taken on the recommendations made.

Chairman of the Commission:

Valeri Todorov