

FINAL REPORT

Investigation of a serious incident, occurred on July 25, 2018 at Burgas Airport, Bulgaria, involving the McDonnell Douglas MD-82 aircraft, registration marks LZ-LDW, operated by „Bulgarian Air Charter Ltd“, during passenger embarkation



Purpose of Report and Responsibility Level

Under Annex 13 of the Chicago Civil Aviation Convention of 07.12.1944, Regulation 996/20.10.2010 of the European Parliament and the Council on the investigation and prevention of accidents and events in Civil Aviation and Ordinance No. 13/27.01.1999 of MT (last amendment and addition - 22.01.2016), the investigation of an aviation event aims at identifying the reasons that led to the event to eliminate and exclude these in future **without identifying someone's guilt or liability**.

List of abbreviations

AO	- Airline Operator;
ARP	- Aerodrome reference point;
DG CAA	- Directorate General Civil Aviation Administration;
BULATSA	- Bulgarian Air Traffic Services Authority;
CAA	- Civil Aviation Act;
AMRAIU	- Aircraft, Maritime and Railway Accident Investigation Unit;
MTITC	- Ministry of transport, information technology and communications;
RWY	- Runway ;
MAG	- Magnetic course
METAR	- Aviation routine weather report
kt	- Knots;
FEW	- Cloud amount - few (1-2 oktas),
NOSIG	- No significant change (used in trend-type landing forecasts)
AAIU	- Aviation Accident Investigation Unit;
p.	- page;
EASA	- European Aviation Safety Agency;
FDR	- Flight Data Recorder;
ICAO	- International Civil Aviation Organization;
SCT	- Cloud amount-scattered (3-4 oktas),
MSN	- Manufacturer Serial Number;
UTC	- Universal Coordinated Time;

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1. Introduction

Date and time of the aviation event: 25.07.2018, 02:20 h UTC.

All times in the Report are given in UTC.

Notified: Aircraft, Maritime and Railway Accident Investigation Unit Directorate (AMRAUD) and Directorate General "Civil Aviation Administration" (DG CAA) of the Republic of Bulgaria, the European Commission, the European Aviation Safety Agency (EASA), The International Civil Aviation Organization (ICAO) and the National Transportation Safety Board (NTSB) of the USA.

On the grounds of the provisions of Article 9, para.1 of Ordinance No. 13, dated 27.01.1999, on Investigation of Aviation Accidents; the occurrence was classified as a serious incident by the Aircraft Accident Investigation Unit at the Aircraft, Maritime and Railway Accident Investigation Unit Directorate (AMRAIU) at the Ministry of Transport, Information Technology and Communications. The materials on the aviation occurrence have been filed in case No. 09/25.07.2018 in AAIU archives. In accordance with the provisions of Article 5, para.1 of Regulation (EU) No. 996/2010 on the investigation and prevention of accidents and incidents in civil aviation, Article 142. Para. 2 of the Civil Aviation Act of the Republic of Bulgaria, dated 01.12.1972, and Article 10, para. 1 of Ordinance No. 13 of the Ministry of Transport, dated 27.01.1999, on the Investigation of Aviation Occurrences, by Order No. RD-08-323, dated 03.08.2018 of the Minister of Transport, Information Technology and Communications, a Commission is appointed for investigation of the serious incident .

Summary:

On July 25, 2018, the McDonnell Douglas MD-82 aircraft, registration marks LZ-LDW, operated by „Bulgarian Air Charter Ltd“ was prepared for a flight from Burgas (LBBG) to Berlin (EDDB). During passenger embarkation, after leaving the aircraft stand the apron bus while maneuvering around the aircraft and hit the wingtip of the aircraft right wing. The damage to the right wing of the aircraft did not allow the flight to be performed. There were no consequences for the flight crew, the passengers and the ground handling crew. The flight was cancelled and the passengers were returned to the terminal.

Because of the investigation, the Commission considers that the serious incident is due to the following reason:

Prime cause:

Violations of the technology during ground handling of the aircraft service by the bus driver when leaving the aircraft stand, after which the apron bus was allowed to manoeuvre below the minimum permissible safe distance.

Main cause:

Insufficient experience, lack of stable habits and skills of the bus driver for movement on the airfield.

2. Factual information

2.1.1. Flight number and type, the last point of departure and time, and planned destination point

Flight Number: BUC3131.

Type of flight: Commercial Air Transport - Passenger – Airline-Charter

Last point of departure: Burgas Airport (LBBG), Bulgaria.

Take-off time: planned at 02:30

Planned destination point: Berlin Schonefeld Airport (EDDB)

2.1.2. Flight preparation and description of the flight

On July 25, 2018, the McDonnell Douglas MD-82 aircraft, registration marks LZ-LDW, operated by „Bulgarian Air Charter Ltd“ was at aircraft stand № 14 at Burgas airport and was preparing for carrying out the charter international flight from Burgas (LBBG) to Berlin (EDDB). There were 155 passengers and 6 flight crewmembers on board. The aircraft was parked with its nose to the north. During the final phase of Ground Services performed by Ground Handling Operator of Fraport Twin Star Airport Management-Burgas Airport, after transporting passengers from terminal 2 to aircraft

stand 14, the driver of an apron bus started for leaving from the aircraft stand. After leaving, the aircraft stand the apron bus while manoeuvring around the aircraft, hit the wingtip of the aircraft right wing.



Fig.1

2.1.3. Location of aviation occurrence

Location	Burgas Airport (LBBG) Bulgaria, Aircraft stand No 14;
Date and time:	25 July 2018, 02:18:37 UTC;
Lighting conditions:	Night;
The control point is with coordinate's	42°34'13"N 027°30'55"E.

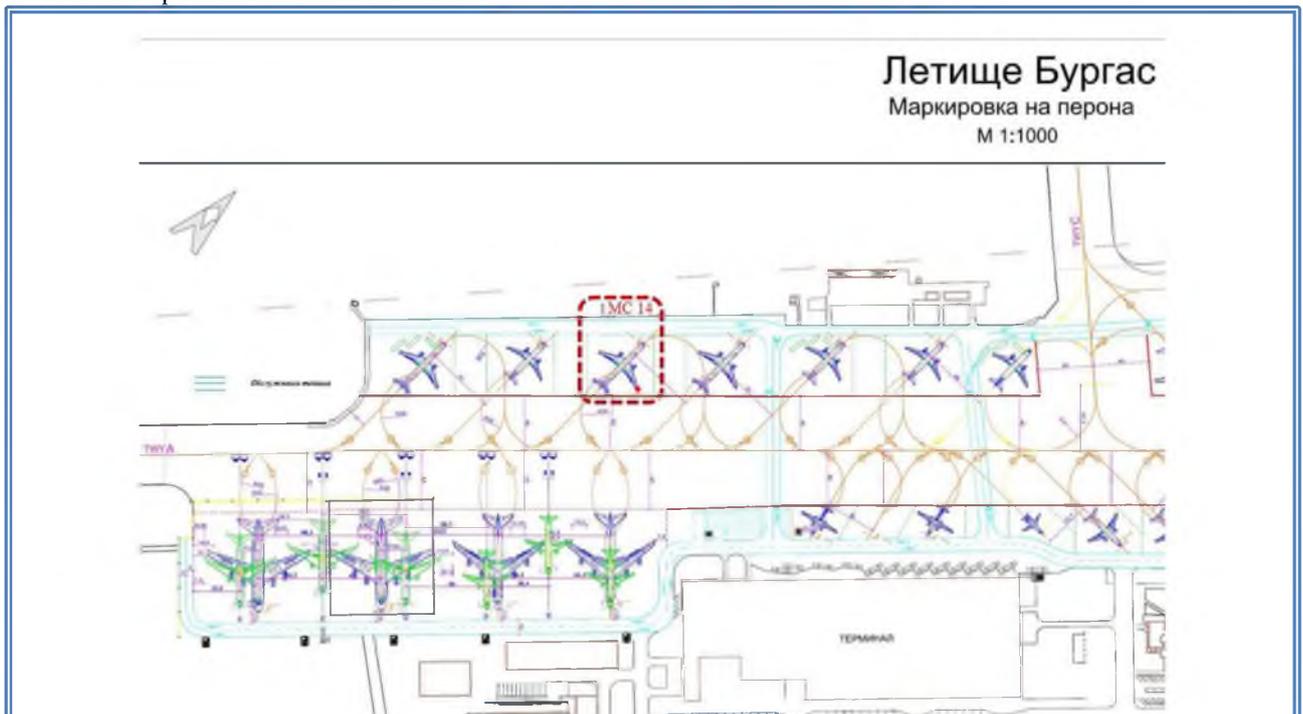


Fig.2 – Burgas Airport apron marking

2.2. Injuries to persons

Injuries	Crew members	Passengers	Other persons	Total
Deaths	0	0	0	0
Serious	0	0	0	0
None	6	155	0	161
Total	6	155	0	161

2.3. Damage to aircraft

During the inspection of the aircraft at the aircraft stand No 14 at Burgas airport, the following damage were found:

- Damage of the wingtip of the right wing;
- Deformation of the end web of the right wing;
- Broken louver and lamp of the right wing;
- Broken strobe forward light of the right wing;
- Broken wing landing light of the right wing;
- Broken lens of forward position light and strobe light of the right wing;
- Broken fairing logo light of the right wing.



Fig.3

2.4. Other damages

The apron bus performing passenger transport received the following damage:

1. Deformation of beam and frame of the first left door of the bus;
2. Deformation of frame and broken window between the first and second left door of the bus;
3. Deformation of beam and frame of the third left door of the bus;



Fig. 4

2.5. Personnel information:

2.5.1. Bus driver

Man 64 years old
 Driving License: Category D, since 01.11.1978
 Valid until 18.03.2020

Qualifications: Transportation of passenger.

Employee of Fraport Twin Star Airport Management-Burgas Airport in the position of driver over 12 tons in the department of the apron service and cargo.

During the period from 01.06.2018 to 09.06.2018 conducted initial practical training.

On 09.06.2018, the driver successfully passed an initial training course for a driver on an apron bus and was accessed to self-dependent work.

In July, the driver worked four shifts on a 12-hour daily shift, 12 hours of night shift and two days of rest. Before the occurrence, he had been resting for 24 hours, and on a shift at 8 p.m. local time.

He has 45 days of experience as an apron bus driver at Burgas airport.

After the event, the driver was tested for alcohol and the results were negative.

The flight crew and the personnel who performed the maintenance of the aircraft for the flight BUC3131 were not related to the realized of occurrence and therefore their qualifications and experience are not considered in this report.

2.6. Aircraft Information

2.6.1. Airworthiness Information

Mc Donnell Douglas-80 MD-82 aircraft, registration marks LZ-LDW, serial number 49795, was produced by Douglas Aircraft Company on September 01, 1989. The aircraft is owned by Bulgarian Air Charter Ltd, with address City of Sofia, Gorublyane, 35 Pavel Krasnov str.

Total flown hours and cycles: 44700 hours and 44700 cycles

Certificate of Registration: No. 2286, issued by DG CAA of Bulgaria, 05.05.2010;

Certificate of Airworthiness: No. 2286, issued by DG CAA of Bulgaria, 22.06.2010;

Certificate of Airworthiness validity check: No. 2286, issued by DG CAA of Bulgaria, 15.06.2018 valid until 18.06.2019

The occurrence covered by this report was not related to the airworthiness of the aircraft.

2.6.2. Aircraft characteristics

The MD-82 aircraft, serial No. 49795, registration LZ-LDW, is a twin-engine jet airplane, designed to carry passengers on short-to-medium range sectors. The A/C is metal construction, single-aisle plane with low arrow-shaped wings, and two rear fuselage-mounted engines, with T-shaped construction of the tail, semi-monocoque fuselage with a retractable landing gear (see Figure 2).

The T-shape construction of the aircraft tail panels determines its specific aerodynamic features in the specific situation.

The technical characteristics of the aircraft were not relevant to the occurrence.

2.7. Meteorological information

The meteorological conditions within 01:00-03:00 UTC on 25 July at Burgas Airport.

Bulgaria is under the influence of a stationary cyclonic system, the center of which is located above the western part of the Black Sea. In the considered period, the zone with active cloud formation and respectively precipitation and thunder activity is located about 50 - 10 km inland, i.e. the area of Burgas Airport remains outside the scope of active atmospheric processes.

2.7.1. Aviation routine weather report METAR at Burgas airport

Interval of issuance from 01:00 to 03:00 UTC on 25 July 2018

LBBG 250100Z 23007KT 220V290 9999 FEW044 20/18 Q1003 NOSIG=

LBBG 250130Z 24004KT 200V290 9999 FEW045 20/18 Q1003 NOSIG=

LBBG 250200Z 32007KT 270V010 9999 FEW047 22/18 Q1003 NOSIG=

LBBG 250230Z 28004KT 230V320 9999 FEW047 22/18 Q1003 NOSIG=

LBBG 250300Z 29006KT 240V350 9999 FEW010 SCT047 22/18 Q1003 NOSIG=

The meteorological conditions at the time of the realization of the occurrence did not affect the serious incident.

2.8. Navigation systems

This has no relation to the realized of the occurrence.

2.9. Communication systems

This has no relation to the realized of the occurrence

2.10. Aerodrome information

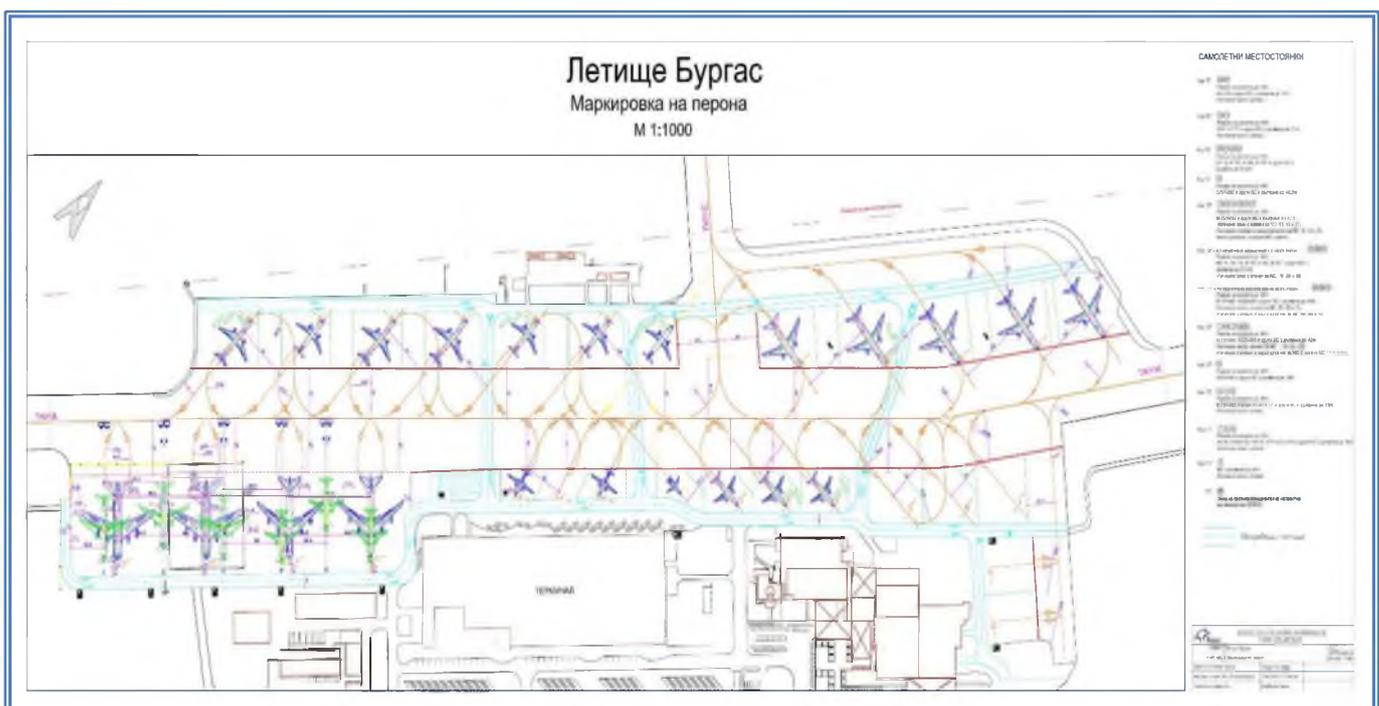


Fig.5-Burgas Airport apron marking

Aerodrome Location Indicator and Name – LBBG-BURGAS;
ARP coordinates and site at aerodrome - N42°34'13" E027°30'55", RWY centre;
Elevation - 135 ft. (44 m);
Designations / RWY 04/22 - MAG 040°/220°;
Dimensions of RWY (m) - 3200 x 45 m;
The apron bus approached to the aircraft stand on the apron path for movement, with observing of the maximum authorization velocity for moving of vehicles on the apron

2.11. Flight recorders

Not decoded.

2.12. Information about the impact and the debris

The impact of the bus is in the right wing of the aircraft. The damages caused by the impact is described are described in paragraph 2.3.

2.13. Medical and pathological information

There are no injuries and medical consequences for the crew, passengers and ground handling crew as a result of the realized occurrence. Medical and pathological examinations are not performed.

An alcohol test was performed on the bus driver at 03:00 by alcohol analyst Dreger- Alkotest 7410. The measured of level alcohol in the blood was 0,00 (‰) promille

2.14. Fire

No fire arising.

2.15. Factors for Survival

The occurrence was not related to the need to carry out emergency - rescue actions.

2.16. Tests and research

For the safety investigation, the following activities were carried out:

1. Research of the written reports, given by the bus driver.
2. Research and analysis of the reports given by witnesses of the event;
3. Research and analysis of the documentation relating to the operation and maintenance of the technical condition of the bus.
4. Research of the training by the driver for the period of his work at Burgas airport;
5. Inspect a recording from a security camera at Burgas Airport;
6. Checking the functional condition of the bus that caused the impact on the aircraft;
7. Analysis of the possible causes for the realization of the occurrence.

The materials from the interviews and analyses were attached to the case for investigation of the serious incident.

2.17. Information for organization and management.

The occurrence was realized by the driver of the COBUS-300 apron bus in ground handling services. The bus is operated by an airport handling operator at Fraport Twin Star Airport Management AD Burgas Airport.

The organization and control for movement in the moving area of Burgas airport are described in the Instruction for movement of the vehicles in the moving area of Burgas airport, which is provided to the Commission for investigation, for use of the necessary information for the purposes of the investigation.

2.17.1. Instruction for movement of the vehicles in the moving area of Burgas airport

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2.6. Service of the apron buses.

- 2.6.1. The drivers of apron buses approach the aircraft stand from the apron paths for movement by complying the maximum authorized velocity for movement of the vehicles on the apron
- 2.6.2. In order to ensure the safety and optimal use of the horizontal marking, the drivers of the apron buses shall use the left and right doors for disembarkation and boarding of passengers.
- 2.6.3 The apron bus drivers can enter the aircraft area only after the final positioning of the passenger stairs around the aircraft.
- 2.6.4. In cases where the aircraft is equipped with its own air stairs and no airport passenger stairs are used, the apron bus drivers can enter the area of the Ground Services only after the Ramp controller has given an instruction for commencement.
- 2.6.5. The approach to the aircraft and the movement in the stand area shall be carried out at a velocity of 5 km/h and at a safe distance of not less than 3 m from the aircraft.
- 2.6.6. The Buses for VIP passengers follow the technology for service of apron buses in a similar way.
- 2.6.7. Prohibited:
- waiting for the aircraft in the aircraft stand;
 - approaching the aircraft before the final positioning of the passenger stairs;
 - stopping of the passenger buses on the routes for taxiing of the aircrafts and serviced roads for movement of vehicles;
 - reversing in the area of the aircraft stand without a guiding operator;
 - parking of buses without securing them against unauthorized movement
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2.18. Additional information

2.18.1. Information about the apron bus

The apron bus COBUS 300 with inventory No 101 is owned by Fraport Twin Star Airport Management AD Burgas Airport. It is designed to carry passengers from the airport terminal to the aircraft stand. On 20.03.2018 during the preparation for spring-summer operation the bus COBUS, inventory No 101 maintenance was done. No faults were recorded on any of the systems of the bus. DG CAA issued an operational licence with a validity period until June 2019.

3. Analysis

As a result of the actions of the investigation, the Commission analyzed the facts and circumstances in order to clarify the reason for the realized (aviation) event.

According to the review of the recording by the security cameras, the bus driver of the COBUS passenger bus with inventory № 101, departed with a right turn on the left side of the aircraft, where the driver had stopped for the disembarkation of the passengers, after their transportation from terminal 2 to aircraft stand No 14. The bus proceeded its movement behind the tail of the aircraft, followed by a left turn, after which it made a contact with the right wing of the aircraft with its left side in the area of the first left passenger door. The bus continued its movement forward while still in contact with the aircraft and stopped after passing by with the remaining length of the bus – about 1 m after the wing of the aircraft.

The commission examined the driver's training for the period of his work at the Bourgas Airport. Upon analysis of the documents, it was found that the driver:

- Conducted initial practical training in the period from 01.06.2018 to 09.06.2018.
- Successfully passed an initial training course for a driver of an apron passenger bus and was allowed to carry out his duties independently on 09.06.2018.

The event was realized 45 days after the bus driver was allowed to carry out his duties independently on the airfield. This period is insufficient to form stable habits and skills for movement on the airfield. In view of the above, it can be concluded that the serious incident under investigation is a result of the following causes:

Prime cause: Violations of the technology during ground handling of the aircraft service by the bus driver when leaving the aircraft stand, after which the apron bus was allowed to manoeuvre below the minimum permissible safe distance.

Main cause:

Insufficient experience, lack of stable habits and skills of the bus driver for movement on the airfield.

4. Conclusion**4.1. Findings**

As result of the investigation, the Commission made the following conclusions:

1. The Aircraft Mc Donnell Douglas-80 MD-82, serial number No 49795, registration LZ-LDW was manufactured in year 1989 on 01 September, manufacturer Douglas Aircraft Company USA.
2. The aircraft has Registration Certificate No 2286, issued on 07.05.2010 by the DG CAA of the Republic of Bulgaria.
3. The aircraft is owned by Bulgarian Air Charter Ltd, with address City of Sofia, Gorublyane, 35 Pavel Krasnov str
4. The aircraft has a Certificate of Airworthiness No 2286, issued on 22.06.2010 by the DG CAA of the Republic of Bulgaria.
5. Airworthiness review certificate of the aircraft No 2286 has been issued on 15.06.2018 by the DG CAA of the Republic of Bulgaria and is valid until 18.06.2019.
6. The bus driver had 45 days' experience as a driver at Burgas airport.
7. The bus driver did not use alcohol during of realization of the occurrence.
8. The bus driver worked at Fraport Twin Star Airport Management AD Burgas Airport in this position for the first season.
9. The bus driver conducted all the theoretical trainings necessary for his position.
10. The bus driver conducted initial practical training and was accessed to self-dependent work.
11. The bus driver did not obey the requested safe distance when leaving the aircraft stand.
12. Insufficient experience, lack of table habits and skills of the bus driver for moving on the airfield by the bus driver.
13. The apron bus COBUS 300 with inventory No 101 was owned by Fraport Twin Star Airport Management AD Burgas Airport.
14. The apron bus COBUS 300with inventory № 101 maintenance were done during the preparation for spring-summer operation.
15. The apron bus COBUS 300 with inventory № 101 has an operational licence issued by the CAA DG, valid until June 2019.
16. The occurrence was realized in the dark part of the day, in the conditions of artificial illumination from the apron lighting of Burgas airport.
17. The meteorological conditions at the time of the realization of the occurrence did not affect the serious incident.
18. There was no emergency evacuation of passengers and crew;
19. The damage did not allow performing the scheduled flight.

4.2. Causes

Based on the analysis performed, the Commission points out that the serious incident resulted from the following causes:

Prime cause:

Violations of the technology during ground handling of the aircraft service by the bus driver when leaving the aircraft stand, after which the apron bus was allowed to manoeuvre below the minimum permissible safe distance.

Main cause:

Insufficient experience, lack of stable habits and skills of the bus driver for movement on the airfield.

5. Safety Recommendations

Taking into account the causes of the serious incident and the deficiencies found in the investigation, the Commission recommends that the following measures should be taken to ensure the flight safety:

BG.SIA-2018/09/01. DG CAA to require from Ground Handling Operators at the public airports of the Republic of Bulgaria to update the initial practical training programmes for the apron drivers of passenger buses with the introduction of practical tasks in a real environment under the supervision of an instructor in the dark part of the day.

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

The Investigation Commission reminds all organizations, to which flight safety recommendations are sent that, on the grounds of Article 18 of Regulation (EU) 996/2010 on Investigation and Prevention of Accidents and Incidents in Civil Aviation and Article 19, paragraph 7 of Ordinance No. 13 on the Investigation of Aviation Accidents are obliged to notify the Air, Maritime and Railway Accidents Investigation National Board in writing of the action taken on the recommendations made.

COMMISSION ON INVESTIGATION OF THE SERIOUS INCIDENT

Sofia, 22 July 2020 **Air, Maritime and Railway Accidents Investigation National Board**