



AIR, MARITIME, AND RAILWAY ACCIDENT INVESTIGATION
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SAFETY INVESTIGATION REPORT

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***ACCIDENT, OCCURRED ON JUNY 28, 2025,
INVOLVING M-18A DROMADER, AIRCRAFT
REGISTRATION LZ-DRB OPERATED BY "KMK"
LTD, DURING AGRICULTURAL FLIGHT IN THE
AREA OF VOISIL VILLAGE, PLOVDIV DISTRICT.***

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 the Ministry of Transport (last amendment and addition - 22.01.2016) of the Republic of Bulgaria, 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.**

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01. List of abbreviations

ALT	-	Altitude;
AMRAINB	-	Aircraft, Maritime and Railway Accident Investigation National Board;
AMM	-	Aircraft Maintenance Manual;
A/C	-	Aircraft;
BULATSA	-	Bulgarian Air Traffic Services Authority;
CAA	-	Civil Aviation Authority;
CPL (A)	-	Commercial Pilot License;
FIC	-	Flight Information Centre;
FCL	-	Flight Crew Licensing;
DG CAA	-	Directorate General Civil Aviation Administration;
EASA	-	European Aviation Safety Agency;
FH	-	Flight Hour;
FCL	-	Flight Crew Licensing;
ft	-	Foot;
ICAO	-	International Civil Aviation Organization;
KT	-	Knots;
MAG	-	Magnetic course
MSN	-	Manufacturer Serial Number;
MTITC	-	Ministry of transport, information technology and communications;
MTOM	-	Maximum Take-Off Mass;
FI(A).	-	Flight instructor;
RWY	-	Runway;
TLB	-	Technical Log Book;
SCAAI	-	State Commission of Aircraft Accident Investigation of the Republic of Poland;
SEP (Land)	-	Single Engine Piston
UTC	-	Universal Coordinated Time;

1. Introduction

Date and time of the aviation event: 28.06.2025, 06:32 local time (03:32 UTC). The difference between local and universal coordinated times is +3 h. All times in the report are given in local time.

Notified: Air, Maritime and Railway Accident Investigation National Board (AMRAINB); General Directorate "Civil Aviation Administration" (DG CAA) of the Republic of Bulgaria; the European Commission, the European Aviation Safety Agency (EASA) and the State Commission of Aircraft Accident Investigation (SCAAI) of the Republic of Poland.

On the ground of Art. 9, para. 1 of the Ordinance No. 13 of 27.01.1999 of the Ministry of Transport of the Republic of Bulgaria dated 27.01.1999 on Investigation of Aviation Accidents the occurrence was classified as an accident by the AMRAINB.

In accordance with Art. 5, para. 1 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, Art. 142, para. 2 of the Civil Aviation Act of the Republic of Bulgaria dated 01.12.1972 and Art. 10, para. 1 of the of the Ministry of Transport of the Republic of Bulgaria dated 27.01.1999 on Investigation of Aviation Accidents, and based on Item 8, para. 1 of Art. 6 of the Rules of Procedure, Structure and Organization of the AMRAINB. The materials about the aviation occurrence have been filed in case No. 02/28.06.2025 in Aviation Transport Unit archives at AMRAINB.

Summary:

On June 28, 2025, at 06:30 h aircraft PZL M-18 A Dromader, registration marks LZ- DRB, with a single crew, takes off to perform a flight for AHR (fertilization of rice plantations with urea) from a aviation field to the village of Voysil, Maritsa municipality, Plovdiv region. About two minutes after the take-off, at 06:32 h local time, at an altitude of 60 meters above rice fields, the engine shuts down on its own. The pilot opens the cargo (urea) flap, turns the aircraft to the left by 20 degrees from the course to avoid landing in flooded rice fields, opens the flaps to 10 degrees and makes an emergency landing in a sunflower field. The aircraft does not reach the selected area and five meters before it hits the right main landing gear in a cement channel. As a result of the impact, the right landing gear breaks and the aircraft, after gliding 46 meters, stops in a sunflower field. The pilot leaves the aircraft independently without injuries and notifies the chairman of the AMRAINB.

The Safety Investigation Commission points to the following causes of the aircraft accident:

Main cause:

Lack of effective control by the technical personnel and the aircraft pilot regarding the amount of fuel available in the aircraft's tanks before the beginning of the flight.

Associated causes:

- The owner "KMK" LTD. does not have approved rights and permits to carry out high-risk specialized commercial operations with PZL M-18A Dromader aircraft, with registration marks LZ-DRA and LZ-DRB.
- The owner of the aircraft M-18A Dromader, registration marks LZ-DRB, did not provide safe and reliable security guards during the period of storage of the aircraft.
- Unfulfilled safety recommendation BG.SIA-2018/07/01 from the aircraft safety investigation report.

2. Factual information

2.1. History of the flight

2.1.1. Flight number, flight type, last point of departure, time of departure and planned point of landing.

Flight number: LZ- DRB.

Type of flight: Specialised Operations (Aerial Work) - Agricultural, without notification to the FIC to start work.

Last departure point: Temporary airport for agricultural work near the village of Voysil, Maritsa district, Plovdiv municipality.

Take-off time: 06:30 on 28.06.2025.

Planned landing point: The point of departure.

2.1.2. Flight preparation and description

On 01.05.2025 at the Gorski Izvor airport (according to the record in the TLB sheet No. 9), the aircraft was loaded with 400 l A-100 N automotive gasoline. Initially, the pilot performed a 10-minute test flight, then performed a 20-minute flight to a former agricultural airport near the village of Voysil. After landing, a record was made in the TLB for completed post-flight maintenance without additional refuelling. According to the pilot's explanations, after landing, the fuel gauges showed a fuel level of about 300 l fuel in the aircraft tanks, and the aircraft and engine are preserved for a long stay. The aircraft remained preserved at the aviation field for 58 days. In the early hours of 28.06.2025 (between 05:00 and 06:00 h) after de-preserving and a ground test of the engine, the aircraft was prepared for flights to agricultural field. No deviations of the parameters during the test were found. According to the pilot, the fuel indicators read 300 liters fuel, which was sufficient for the planned flight. The aircraft underwent pre- flight maintenance according to the entry in the TLB sheet No. 10. The aircraft was loaded with 1500 kg of urea and takes off at 06:30 h for a flight to Agricultural field. The air temperature at take-off was about 20 °C. At 06:32 h local time, two minutes after the take-off at an altitude of 60 meters above rice fields, the engine stalled. The pilot opened the cargo (urea) flap, turned the aircraft to the left of the course by 20°, to avoid landing in flooded rice fields, lowered the flaps by 10 degrees and directed the aircraft for an emergency landing in a sunflower field. The aircraft, on a course of 240°, hit the right main gear in a cement channel of an irrigation dam and after 46 meters stopped in a sunflower field on a course of 316°. The pilot left the aircraft on his own without immediate bodily harm.

2.1.3. Location of aviation occurrence

Location: The location of the aviation accident is a sunflower field with geographical coordinates: 42°13'30.157" N; 24°35'5.369"E

Date and time: 28 June 2025, 06:32 h local time.

The event was realized early in the morning, during daylight hours.

A flight plan provided by the pilot is given in Fig. 1 of Annex 1.

2.2. Injuries to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Total in the aircraft</i>	<i>Others</i>
<i>Fatal</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Serious</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Minor</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>None</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>0</i>
<i>Total</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>0</i>

2.3. Damage to aircraft

During an initial inspection of the aircraft at the scene of the accident, the investigation team of the AMRAINB found the following:

Initially, the aircraft contacted the right main landing gear in the dike of a cement irrigation canal (Fig. 2 - photos of the damage are provided in Annex 1).

After the location of the initial impact it has been established.

- At 18 meters, there was a deformed urea spreading device (Fig. 3).
- At 28 meters onto the ground was the right step of the cabin (Fig. 4).
- The right main landing gear was separated from the aircraft at a distance of 40 meters (Fig. 5).
- At 46 meters from the initial contact, the aircraft was established on a course of 316° (Fig. 6).
- The four blades of the air propeller are bent back towards the body (Fig. 7).
- The fuselage has deformations and tears in the skin in its lower part (Fig. 8).
- The tail (back keel) was deformed and detached from the fuselage. The wheel has retained its integrity (Fig. 9).
- The right wing was contacted the ground and has deformations in the area of connection to the fuselage, and the flap and aileron have deformations (Fig. 10).
- The left wing is without visible deformations, but the trailing edge of the aileron was bent upwards (Fig. 11).
- Part of the cargo (urea) was scattered under the fuselage and was in the landing zone (Fig. 5).
- The horizontal and vertical rudders were resting on the ground and have deformations and abrasions in their lower part (Fig. 12).
- The aircraft's fuel tanks have retained their integrity but were empty (no gasoline). When checking the fuel gauges in the cockpit, readings of 0 liters on the left gauge and 2/3 fuel on the right gauge were found (Fig. 13).
- There are no signs of a fire.

2.4. Other damage

No other damage

2.5. Personnel information

2.5.1. Commander

Man, 66 – year - old

Helds:

Commercial Pilot License - CPL(A), issued on 16.02.2015.

Class rating - SEP(LAND), valid until 31.10.2026;

Type rating:

- AN-2: Captain - 12.12.1988.
- YAK-52: Captain - 07.08.89.
- YAK-52: Instructor - 07.08.89.
- ZLIN 50LS: Captain - 1983.
- AN-2: Pilot - 10.04.1995.
- AN-2: Instructor - 13.03.1997.
- AN-2: Flights without second pilot - 25.05.1998.
- M-18 “D”: Captain - 03.11.2008.

Medical certificate - Class 1/2/ LAPL, valid until 24.03.2027 with restriction VML (Valid only with correction for defective distant, intermediate and near vision).

Total flying:

- Zlin 526F 82 h;
- Zlin 50LS 94 h;
- YAK-52 197 h;
- AN-2 9700 h;
- PZL M-18 Dromader 5400 h;
- Total flying hours: 15473 h.

Data according to entries in the pilot's flight logbook, filed on 12.01.2005:

Flight hours for the last 30 days – 40:15 h;
 Flight hours for the last 7 days – 10:00 h;
 Flight hours for the last 24 days – 4:00 h;
 Information regarding the rest of the pilot before the flight – 20 h.

The Safety Investigating Commission assumes that the captain possesses the required qualifications and medical fitness for flights. The pilot had multifocal glasses available.

2.5.2. Aircraft technician

Man, 66 – year - old.

Helds:

Aircraft Maintenance Licence AML Part 66, category B1.2 for piston engine aircrafts, last edition 28.01.2022, valid until 27.01.2027.

2.6. Aircraft Information

2.6.1. Airworthiness Information

Aircraft Type M-18A Dromader, registration LZ- DRB, serial number IZ015-13 was manufactured in 1985 at PZL Mielec, Republic of Poland. The aircraft has a registration certificate No. 2264, issued on April 5, 2022, by General Directorate of Civil Aviation Administration of the Republic of Bulgaria. The aircraft is owned by “KMK” LTD with address 56 Boruygrad Street, 6000 Stara Zagora, Republic of Bulgaria.

The aircraft engine is type ASz-62IR-M18, serial number K 1637492, installed on the aircraft on 24.10.2022. The engine was equipped with a propeller AW -2-30, serial number W373101, on 07.05.2009.

The aircraft has a Certificate of Airworthiness EASA Form 25 with No. 2264, issued by General Directorate of Civil Aviation Administration of the Republic of Bulgaria on 20.05.2009. The Airworthiness Review Certificate has the reference number BG - ARC -2264 EASA Form 15C, issue 4 issued on May 22, 2024 by DG-CAA and 1st extension until May 20, 2026, issued by “AVIO OTRYAD - VARNA” LTD (BG.CAO.0443).

A Certificate of Release to Service (CRS) with No. 004 was issued on 22.11.2024 by the Ministry of Defence, registered under No. BG .145.4023. The following resource reference for the aircraft is recorded in the CRS.

	Type	Serial number	Flight hours since start of operation	Flight hours after overhaul
Aircraft	M 18	IZ015-13	5115:40	-
Engine	AIII-62HP-M18	K1637492	2223:26	1118:54
Propeller	AW-2-30	W373101	3118:37	24:14

The next 100-hour scheduled maintenance is scheduled according to the maintenance program at 5215 ± 10 hours from the start of operation of the aircraft. From the issuance of the report on 22.11.2024, until the day of the event on 28.06.2025, the aircraft has completed two flights with a total duration of 1 flight hour.

In the Maintenance Program for the PZL M-18A Dromader aircraft of JSC "KMK" LTD, a total technical resource of the aircraft of 6000 FH is recorded and is indicated SB E -02.172-2001.

As of the date of the aircraft accident, according to the latest entries in the forms, the aircraft had flown from the beginning of operation until the day of the event 5116:10 start of exploitation (residual resource of the fuselage - 8 83 :5 0 h to first overhaul); The engine has operated 2224:06 h from the start of exploitation and 1119:34 h from overhaul (remaining engine resource to overhaul - 80:26 h); The propeller's operating time is 3119:17 h. from the start of exploitation and 24:54 from the start of exploitation (remaining propeller resource - 1475:46 h) .

The aircraft's form records a maximum take-off mass of 5300 kg; the mass of an empty plane 2730 kg and the maximum landing mass 4200 kg. The latest report on weighing and determining the centre of gravity of the aircraft is No. 2 / 22.11.2024.

The aircraft maintenance is carried out by the Recognized Organization " Aviomont " AD Montana (Approval No. BG.145.4023) in accordance with the PZL M-18A Aircraft Maintenance Program of the aircraft Dromader of "AVIO OTRYAD - VARNA" LTD, approved by the General Directorate of Civil Aviation Administration of the Republic of Bulgaria under No. 0443.MP. M18.01-00.20230214. Certificate for Re-Commissioning (CRS) No. 4 (TO-100 h) issued on 22.11.2024.

A letter has been sent to accredited representatives of the General Directorate of Civil Aviation Administration of the Republic of Bulgaria (GD CAA) to provide an opinion on the right of the aviation operator "KMK" LTD to perform aerochemical operations with an aircraft with registration marks LZ- DRB, as of the date of the event 28. 06.2025. In response, the GD CAA has provided an opinion on the right of the aviation operator "KMK" LTD to perform operations for aerochemical works with an aircraft type M-18 A Dromader. It states that as of the date of the event, 28.06.2025, Aviation Operator "KMK" LTD holds a National Air Operator Certificate under No. BG.SPO.N-08 valid until 09.12.2026, according to which the operator has the rights to perform its permitted operations only for the KA-26 helicopter with registration mark LZ -6048 and did not hold the rights to perform operations with the PZL aircraft M-18A Dromader with registration marks LZ - DRA and LZ - DRB.

2.6.2. Brief information on the technical characteristics of the aircraft

The M-18A Dromader is a single-engine, single-seat, all-metal aircraft for aerochemical work, with a low-slung wing. The aircraft has a non-retractable three-wheel landing gear with a tailwheel. The chemical tank is located in front of the cockpit.

Maximum take-off mass – 5300 kg;

Maximum landing mass – 4200 kg;

Maximum mass of the chemical – 1500 kg;

Empty aircraft mass – 2730 kg;

Mass of an empty aircraft with a fertilizer spreader - 2945 kg;

Maximum mass for the luggage compartment - 30 kg;

Maximum permissible instrument speed – 280 km/h;

Maximum cruising instrument speed – 230 km/h;

Instrumented maneuvering speed – 228 km/h;

Maximum instrument speed with installed equipment for aerochemical works – 194 km/h;

Stall speed with flaps at 0° – 119 km/h;

Stall speed at 15° flaps– 111 km/h;

Engine speed – maximum 2220 min⁻¹, minimum 550 min⁻¹. The capacity of the fuel system of the PZL M-18 aircraft is 414 l. Two fuel tanks of 200 l each are located in the wing. From the wing fuel tanks, the fuel flows by gravity into a 40-liter consumption tank, and then, using an electric pump, is fed into the engine carburetors. In the fuel tanks on the left and right half-wings, two float- type fuel level sensors are located I 7740-30 (four in total). The sensors send an electrical signal according to the fuel level in the tanks to two type 64126 indicators located on the right cockpit dashboard.

2.6.3. Information about the fuel used and its condition

The last refueling of the aircraft was carried out and recorded in the TLB - sheet No. 9 dated 01. 05.202 5 (planned 400 l; loaded 400 l; total 400 l). The aircraft performed a flight from the Golyam Izvor aviation field to the aviation field in the village of Voysil. For the flight, a record was made in the TLB for 10 minutes of engine operation on the ground and 30 minutes of flight time. According to documents submitted by the operator, the fuel loaded into the aircraft was obtained from Lukoil Bulgaria LTD and is the product "Automobile gasoline A-100 H with Biocomponent".

According to the entry for admission to operation in the TLB, sheet No. 10 dated 28.06.2025, pre-flight maintenance was performed at 5:00 h local time. In column 20 of the logbook there is an entry for planned fuel of 300 liters. In column 21 there is no fuel loaded recorded. In column 22 an entry is made for available 300 liters of total fuel.

2.6.4. Information about the condition and functioning of the fuel system the aircraft system

At the scene of the accident, the investigation team from the AMRAINB found a lack of fuel in the aircraft's tanks. At the same time, the fuel gauges in the cockpit reported the presence of more than

½ fuel in the right wing and 0 on the left. According to the diagrams attached to this section, the fuel gauges receive data from four fuel level sensors, located two in each of the left and right tanks (Fig. 14 and Fig. 15).

An expert inspection has identified a malfunction in the fuel sensor 13/5 (inner from left wing) and fuel sensor 14/5 (inside of right half-wing).

2.7. Meteorological information

The weather report in the region of southern Bulgaria and around the village of Tsalapitsa, at 04:00 UTC on 28.06.2025:

Pressure field at the ground for 28.06.2025 – 04 UTC (Fig. 16).

No cumulonimbus clouds (TCU / SW) and thunderstorm activity were observed in the area under consideration. Convective cloudiness at this time was developed over the eastern part of the country, East of Sliven and Shumen. Data from meteorological radar – Sofia + Varna, for 26.06.2025, 04:15 UTC (Fig. 17).

In the period under review, there are no SIGMET information broadcast for Flight Information Centre Sofia and there is no forecast for hazardous phenomena from the WAFC maps London – (Fig. 18). The map shows that there is no SIGMET information issued. and visualizing WAFC SIGWX Chart, for 28.06.2025 00- 06 UTC.

The wind in the area of the village of Tsalapitsa was from the West with a speed of 12 -18 kt at the ground, and at 5000 ft up to 10-16 kt (Fig. 19). Wind at the ground (in black) and at 5000 ft (in blue) from the numerical model BULATSA - WRF for 28.06.2025 04 UTC.

The Safety Investigating Commission accepts that the weather conditions did not affect the flight and did not have an impact on the occurrence of the aviation event.

2.8. Aids to navigation

Standard navigation equipment of the aircraft.

2.9. Communications

Standard communication equipment of the aircraft – VHF radio station.

2.10. Aerodrome information.

The parking stand and take-off airport for the flight is a former agricultural aviation field in the village of Voysil in the municipality of Maritsa, Plovdiv region. The altitude of the aviation field is 185 m. The aviation field is with coordinates (42°13'4.69" N; 24°38'17.40" E) and is not fenced.

The parking stand is not fenced and there is no video surveillance. The aircraft's security was provided by hired external personnel.

2.11. Flight recorders

Not used on the aircraft type.

2.12. Impact and debris information

The plane took off from the uncertified Voysil Airport, Plovdiv District, to carry out aerochemical works - fertilizing rice plantations with urea in the vicinity of the town of Saedinenie.

Around 06:32 h local time, two minutes after take-off at an altitude of 60 meters above rice fields, the engine stalled. The pilot performed a forced landing procedure and directed the aircraft into a sunflower field. The aircraft did not reach the selected area, hit the right landing gear in a cement canal of an irrigation dam at a heading of 240° and after 46 meters stopped in the field at a heading of 316°, with the lower part of the fuselage and the right wing half resting on the ground.

The urea sprayer was found 18 meters from the point of initial contact of the aircraft with the ground, 28 meters from the right cockpit step, and 40 meters from the right main landing gear.

The four blades of an air propeller are bent back towards the body.

An initial external inspection of the engine revealed no damage. The aircraft fuselage was deformed in its lower part.

The right landing gear was separated from the fuselage after impact with the ground. The left landing gear retained its position. The tail (back keel) was deformed and detached from the fuselage, but the wheel remained intact.

The right wing was broken off against the fuselage and rested on the ground. The flap and the aileron were torn off.

The left wing has no visible deformations, but the trailing edge of the aileron is bent upwards.

There is no gasoline in the fuel tanks on the left and right wing.

The vertical and horizontal rudders are resting on the ground and have deformations and abrasions in their lower parts.

The cockpit located in the upper part of the aircraft's fuselage was not damaged.

The fuel gauges in the cockpit of the aircraft at the point of its final stop were zero liters on the left gauge and 2/3 on the right gauge (Fig. 14).

The coordinates of the point of initial contact of the aircraft with the ground were LAT: 42°13'31.232"N; LON: 24°35'7.432"E, the aircraft was on a course of 240°. After gliding for 46 m, the location of the aircraft's final stop was with coordinates LAT: 42°13'30.157"N and LON: 24°35'5.369"E, the aircraft was on a course of 316°.

Part of the urea loaded before the flight was found under the aircraft's fuselage.

During the re-inspection of the aircraft, it was found that there was fuel in both engine carburetors - (150 milliliters of gasoline each). The fuel tanks in the wing were empty, and the floats of the fuel sensors rested on the bottom (Fig. 20). The sensors and indicators from the aircraft's fuel system were dismantled and submitted for expert examination and opinion (Fig. 21; Fig. 22).

2.13. Medical and pathological information

No traumatic injuries were found to the pilot. The pilot was wearing a seat belt.

2.14. Fire

The event that occurred was not accompanied by a fire before or after the aircraft touched down on the ground.

2.15. Factors for Survival

After the final stop of the aircraft, the pilot turned off all electrical circuits, left the cockpit and informed the Chairman of the AMRAINB.

2.16. Tests and research

For the purposes of the safety investigation, the Safety Investigation Commission carried out:

1. Initial inspection by aircraft investigators of the AMRAINB at the landing field of an aircraft with registration marks LZ- DRB in the land near the village of Voysil. The results of the inspection of the field of the event are reflected in paragraphs 2.1.2, 2.1.3, and 2.12.
2. Repeated inspection after the aircraft was transported to the airfield near the village of Voysil. During the inspection, additional photographs of the aircraft were taken, the sensors and indicators from the fuel system were dismantled for examination, and the aircraft's documents were seized with a protocol.
3. Interviews with the pilot and aircraft technicians, and subsequently with the chief pilot and chief engineer of JSC "KMK" LTD. The results of the interviews with the pilot, aircraft technicians and officials of the aviation operator are reflected in paragraphs 2.1.2 and 2.5.
4. Study of the operational and technological documentation of the aircraft, as well as the condition and functioning of the aircraft's fuel system, set out in paragraphs 2.6.1; 2.6.2; 2.6.3 and 2.12.2.

According to the entry in the aircraft form, the resource of the M-18A Dromader is determined by Bulletin No. K/02.142/91. Section 4 specifies the service life of accessories, parts and rubber seals of the aircraft. According to the Bulletin, the fuel gauge sensors Type 17740-30 are equated to the aircraft resource. Their serviceability must be checked according to the maintenance program every 100 h. In case of malfunction or incorrect readings, they must be replaced or repaired. There is a record of completed maintenance according to Maintenance Program No. AMP. M 18 A. Pr TO/01-

00/ dated 25.01.2023. In operational sheet No. 12 / 15.11.2024, a check of the fuel gauges according to the MP - p. 3/34; 3/8 and 3/9. for operability has been completed and scheduled. There are no records made in the card for deviations and malfunctions of the system.

On the day of the accident, the aircraft underwent pre-flight maintenance, as reflected in the TLB sheet 10 dated 28.06.25. There is no record of any malfunctions or pending defects in the logbook.

5. Analysis of the take-off mass of the aircraft: The take-off mass of the aircraft before take-off was 4570 kg with a maximum allowable 5300 kg. It is the sum of the mass of an empty aircraft with a fertilizer spreader in accordance with the weighing protocol of 2945 kg and added 1500 kg of fertilizer; 75 kg of the pilot and probably 50 kg of gasoline (after a two-minute flight, the fuel tanks of the aircraft at the accident field were empty). According to the pilot, the loaded 1500 kg of urea was in the process of being discharged in the period between the self-stabilization of the engine and the contact of the aircraft with the ground surface. The presence of urea was found under the fuselage of the aircraft at the place of its final stop. The mass of the aircraft during the emergency landing was less than the maximum allowable 4600 kg.

6. The condition and functioning of the aircraft's fuel system was checked. Four fuel sensors from the aircraft's wing tanks and two fuel gauges in the cockpit were removed for expert examination.

7. An expert opinion has been prepared on the technical condition of 4 fuel sensors (Fuel gauge transmitter type C7740-30). The conclusion states: "The four fuel sensors provided gauge transmitter type C7740-30 of the fuel tanks of the M-18 A Dromader aircraft to establish their technical condition have a worn appearance from prolonged operation. As a result, there is no repeatability of the measured resistance values of the single-type potentiometer built into the four sensors at the lower and upper positions of the float.

- The fuel sensors with reference numbers No. 1 and No. 3 (external on the left and right wing) according to the measurements made have correct readings.

- Fuel sensor with conditional No. 2 (inner from the left wing) has a large deviation of the measured resistance in the upper position of the float -15.6 Ω , which is half less than necessary, as a result of which, when the tank is full, the fuel sensor will give readings for a half-full tank.

- Fuel sensor with conditional No. 4 (inner from the right wing) is completely unusable. According to the measurements made, the resistance value of the built-in potentiometer in the fuel sensor is always 37.2 Ω , regardless of the position of the float. This means that even in the absence of gasoline, the fuel sensor constantly provided information about the presence of fuel in the right tank.

8. Information was requested and received from the manufacturing plant PZL Mielec regarding the resource of sensors C7740-30. According to the manufacturer, the resource of the aircraft and its equipment up to 6000 hours is determined by Bulletin No. K/02.142/91. Sensors C7740-30 are not repaired, but new ones are available for sale.

9. An expert opinion has been prepared for DG CAA with an analysis of regulatory compliance under the Civil Aviation Act and the related Ordinances regarding the term "airport" and the basing of M-18A Dromader aircraft, registration signs LZ - DRA and LZ - DRB on a former agricultural site. The opinion proposes a recommendation to introduce the term "Operating Site" in Bulgarian aviation legislation in order to increase the level of safety.

10. A logical -probabilistic analysis of possible causes of the aviation event is made in Chapter 3 of this report.

2.17. Additional information:

1. By plane LZ - DRB a 100-hour maintenance was performed according to Certificate (CRS) No. 004/22.11.2024 at the Gorski Izvor aviation field. In operational sheet No. 12 of Work Package AOV - M 18- DRB -1 / 15.11.2024 in point 3, an operation to check the fuel meters for proper operation is scheduled (No. of MR item 3/34; 3/8 and 3/9- Fig.20).

2. PZL Aircraft Maintenance Program M -18 Dromader, approved by the GD CAA with No. 0443.MP. M18.01-00.20230214, registered operators are "KMK" LTD and Sole Trader "Kentavr-Elizar Atanasov" who do not have a license for operators of M -18 Dromader aircraft as of the date of the event.

3. A de-conservation in the TLB and in the Aircraft Forms for the period from 01.05.2025 to 28.06.2025.

4. In the Final Safety Investigation Report of the investigation of an aviation accident with a PZL M18 Dromader aircraft, registration marks LZ-8012, operated by the aviation operator “EMI ER” LTD, carried out on 06.07.2018 in the area of the village of Malo Konare, Pazardzhik district, there is an entry: “ Based on the circumstances set out in this report and the analysis of the same, the Safety Investigation Commission indicates as the cause of the aviation accident: uncommand of the aircraft engine in flight due to lack of fuel, due to the pilot’s insufficient control of the available fuel and the refueling with sufficient fuel during the preparation for the flight. An accompanying cause in this case is the incomplete and inaccurate implementation of the requirements regarding ensuring the normal functioning of the fuel meters during the performance of Maintenance service F100. In the Final Safety Investigation Report, the Safety Investigation Commission recommended that safety measures must be implemented: The first of these is: "When performing an airworthiness review, the presence of a red indicator line to mark the calibrated zero of both fuel gauges”. This recommendation was not implemented on the M 18A Dromader aircraft. registration marks LZ - DRA and has not been inspected by the GD CAA.

3. Analysis

The following hypotheses were considered to determine the causes of the accident:

- First hypothesis related to errors made by the pilot in piloting techniques, which led to an aerodynamic stall of the aircraft or a deterioration in the pilot's health.
- A second hypothesis related to adverse external conditions – weather phenomena, bird strikes, or other external factors that led to the inability to control the aircraft.
- A third hypothesis related to technical failures such as aerodynamic configuration disruption, engine failure or aircraft systems and controls, which caused the inability to control the aircraft.

According to the first hypothesis - no errors made by the pilot in flight have been identified, and his actions after the aircraft's engine self-stabilized were in accordance with regulatory documents. There is no information about the pilot's deteriorating health.

According to the second hypothesis – in accordance with an analysis of the meteorological situation attached in paragraph 2.7, at the time of the flight, (Report on the meteorological conditions in the area in the period – 04:00 UTC on 28.06.2025, none broadcast information and forecast for dangerous phenomena or other external factors, such as bird strikes, that may contribute to the inability to control the aircraft.

Under the third hypothesis, the Safety Investigation Commission did not find any technical failures, aerodynamic configuration violations, engine failure or failure in the aircraft controls that would have led to the inability to control the aircraft. The Safety Investigation Commission accepts as true the pilot's statement that the engine uncommands two minutes after take-off. The lack of fuel in the aircraft's wing tanks led to the engine shutting down by itself in flight. There was fuel available in the aircraft's tanks only for the completed engine ground test, take-off and two-minute flight. Before the flight on 28.06.2025, an entry was made in the aircraft's TLB for 300 liters of fuel available. The entry was made on the basis of 400 liters of gasoline loaded at the G. Izvor site, consumption of 100 liters for tests, fly and flight to the Voysil aviation field on 1.05.2025. During the period of parking stand of the aircraft at the site near the village of Voysil from 01.05.2025 to 28.06.2025, an unrecorded draining of gasoline from the wing tanks of the aircraft was probably carried out, and the alleged and recorded 300 liters of gasoline in the TLB were missing. The available fuel was only enough for the performed ground test of the engine and a two-minute flight. The pilot and the aircraft technician trusted the readings of the fuel gauges (Fig. 13). The expert assessment carried out established incorrect readings of two of the four fuel measurement sensors in the aircraft tanks. The internal sensor on the left wing has low fuel level readings, and the internal sensor from the right wing tank shows maximum fuel level values at any float position, i.e. full or empty tank.

Considering the above in this chapter, the third hypothesis related to a series of errors that led to take-off and flight without the planned amount of fuel, engine uncommand in flight and subsequent emergency landing can be indicated as the main cause of the accident.

4. Conclusion

4.1. Findings:

1. Aircraft Type M-18A Dromader, registration marks LZ- DRB, serial number IZ015-13 was manufactured in 1985 at the “PZL” plant in Mielec, Republic of Poland.
2. The aircraft has a registration certificate No. 2264, issued on April 5, 2022, by the GD CAA, Republic of Bulgaria.
3. The aircraft is owned by “KMK” LTD with address 56 Boruigrad Street, 6000 Stara Zagora, Republic of Bulgaria.
4. The owner of aircraft with registration marks LZ- DRB “KMK” LTD does not have a permit for high-risk specialized commercial operations with aircraft M-18A Dromader.
5. The aircraft has a Certificate of Airworthiness EASA Form 25 with No. 2264, issued by the GD CAA on 20.05.2009 and EASA Airworthiness Review Certificate Form 15C, Issue 4 with No. BG-ARC-2459, issued on May 22, 2024, and valid 1st extension of the term until May 20, 2026, issued by “AVIO OTRYAD - VARNA” LTD (BG.CAO.0443).
6. According to the records in the aircraft, engine and propeller forms, the aircraft has flown from the beginning of operation until the day of the event 5116:10 FH (the remaining resource of the fuselage is 883:50 h); The engine has run for 2224:06 h from the beginning of exploitation and 1119:34 h from the overhauling (the remaining engine resource until overhaul is 80:26 h); The propeller's operating time is 3119:17 h. from beginning of operation and 24:54 from overhaul (the remaining resource of the propeller is 1474:06 h).
7. The aircraft is equipped with an ASz-62IR-M18 engine, serial no. K1637492, with a total technical resource - 6200 hours according to Bull. 144/ S /2014.
8. At the time of the event, the fuselage, engine and propeller of the M-18A Dromader aircraft, registration marks LZ - DRB, have the necessary resource to perform flights.
9. The aircraft's technical maintenance is carried out by the Recognized Organization "Aviomont" AD Montana (Approval No. BG .145.4023) in accordance with the PZL M-18A Aircraft Maintenance Program of the operator "AVIO OTRYAD - VARNA" for Dromader, approved by the GD CAA on 08.03.2023 under No. 0443.MP.M18.01-00.20230214.
10. There is no exceeding of the maximum take-off mass of the aircraft during the flight.
11. The lack of fuel in the aircraft's tanks during the flight led to the engine uncommand immediately after take-off, and the subsequent loss of speed and altitude necessitated an emergency landing. There were no errors made by the pilot in the pilotage techniques at low altitude.
12. The pilot possesses the necessary qualifications and medical fitness to perform the flights.
13. There is no information that physiological factors or loss of capacity affected the pilot's performance.
14. There is no information available about insufficient rest of the pilot before the flight.
15. After the final stop of the aircraft, the pilot disconnected all electrical circuits, then left the cockpit and informed the interested parties about the event.
16. Weather conditions do not have a direct impact on the implementation of the event.
17. Two of the fuel sensors - Type C7740-30 - gave incorrect readings of the fuel available in the aircraft's tanks.
18. According to the 100-hour inspection performed by the technical organization, in work package AOV-M18-DRB-1/15.11.2024, a check of the fuel meters for proper operation (point 3) is scheduled. No records of malfunctions in the system have been made.
19. The owner of an M-18 A Dromader aircraft with registration marks LZ-DRB did not provide reliable security guard during the parking stand period from 01.05.2025 to 28.06.2025 of the aircraft, which led to unregulated fuel draining from the wing tanks of the aircraft.
20. According to the opinion provided by the DG CAA, the National Air Operator Certificate of "KMK" LTD, which granted rights to operate M-18A aircraft, was valid until 09.06.2025. As of 28.06.2025, "KMK" LTD is in the process of carrying out an inspection by the DG CAA of an aviation operator for the issuance of a permit for high-risk specialized operations in the period from 09.06.2025 to 30.06.2025. The permit was denied by order No. 45-01-340/30.07.2025-TLP-G.

4.2. Causes:

Based on the information presented in the report and the analysis made, the Safety Investigation Commission points to the following reasons for the occurrence of the aviation accident:

Main cause:

Lack of effective control by the technical personnel and the aircraft commander regarding the amount of fuel available in the aircraft's tanks before the start of the flight.

Associated causes:

- The owner "KMK" LTD does not have approved rights and permits to carry out high-risk specialized commercial operations with PZL M-18A Dromader aircraft, with registration marks LZ-DRA and LZ-DRB.
- The owner of the aircraft M-18A Dromader, registration marks LZ-DRB did not provide safe and reliable security guards during the parking stand period of the aircraft.
- Unfulfilled recommendation BG.SIA-2018/07/01 from the aircraft Accident Safety Investigation Report.

5. Safety Recommendations:

Considering the cause of the accident, the Safety Investigation Commission recommends the following measures to ensure flight safety:

BG.SIA-2025-01 GD CAA to insist aircraft owners to provide reliable security guards during aircraft parking stand period.

BG.SIA-2025-02 GD CAA to prepare a bulletin for verification of the serviceability and accuracy of the readings of the fuel systems of M-18 Dromader aircrafts that are entered in the Bulgarian register.

Pursuant to Article 18, para. 5 of Regulation 996/2010, the issued safety recommendations will be recorded in the centralized European 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 is obliged to notify the Air, Maritime and Railway Accidents Investigation National Board in writing of the action taken on the recommendations made.

**AIR, MARITIME AND RAILWAY ACCIDENTS INVESTIGATION NATIONAL BOARD
COMMISSION ON INVESTIGATION OF THE ACCIDENT**

SAFETY INVESTIGATION COMMISSION

Sofia

January 30, 2026

ANNEX 1

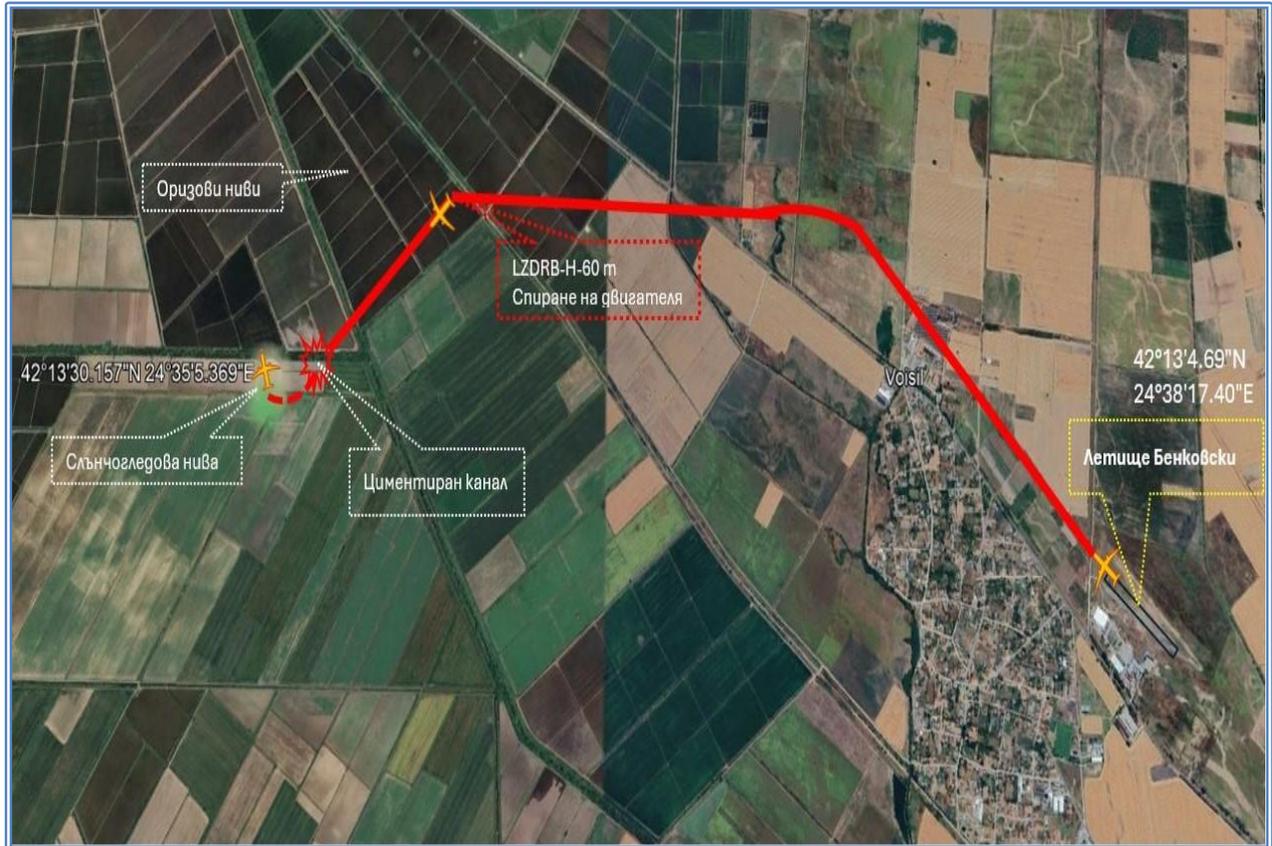


Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12



Fig. 13

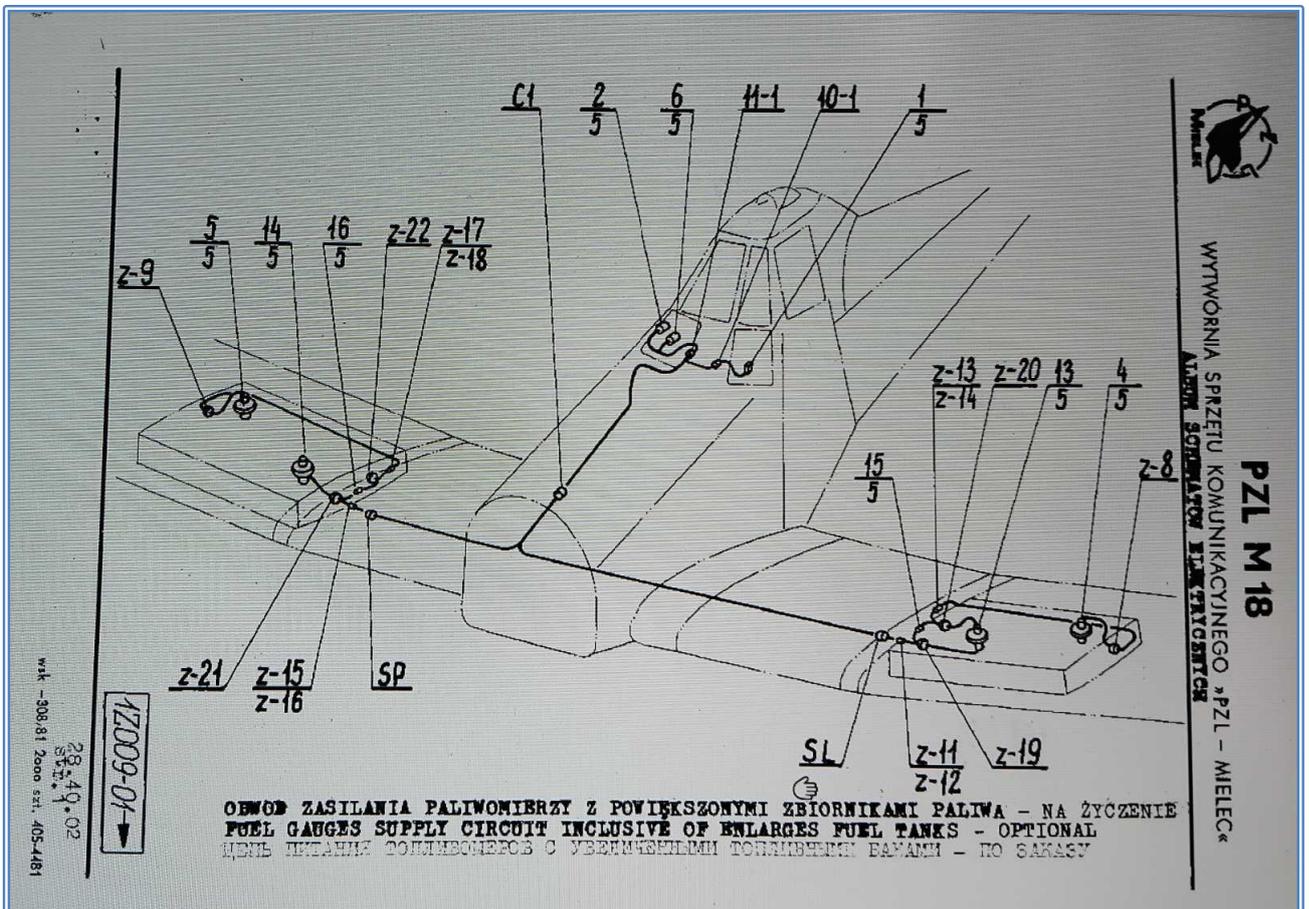


Fig. 14



PZL M 18

WYTWÓRNA SPRZĘTU KOMUNIKACYJNEGO »PZL - MIELEC«
ALBUM SCHEMATÓW ELEKTRYCZNYCH

OBWÓD ZASILANIA PALIWIOMIERZY Z POWIĘKSZONYMI ZBIORNIKAMI PALIWA
FUEL GAUGES SUPPLY CIRCUIT WITH ENLARGED FUEL TANKS
ЦЕПЬ ПИТАНИЯ ТОПЛИВОМЕРОВ С УВЕЛИЧЕННЫМИ ТОПЛИВНЫМИ БАКАМИ
NA ŻYCZENIE
OPTIONAL
PO ZAŁĄCZU

1Z009-01 →

Osł. Mark Обоз.	Nazwa Name Наименование	Typ Type Тип	Miejsce zabudowy Install. place Место установки
1/5	Wyłącznik Switch Выключатель	AZRGK-2	Tablica lewa LH panel Левая доска
2/5	Wskaźnik Indicator Указатель	64126	Tablica prawa RH panel Правая доска
4/5	Dajnik paliwomierza Fuel gauge transmitter Датчик топливомера	07740-30	Zbiornik lewy LH tank Левый бак
5/5	Dajnik paliwomierza Fuel gauge transmitter Датчик топливомера	07740-30	Zbiornik prawy RH tank Правый бак
6/5	Wskaźnik Indicator Указатель	64126	Tablica prawa RH panel Правая доска
13/5	Dajnik paliwomierza Fuel gauge transmitter Датчик топливомера	07740-30	Zbiornik lewy LH tank Левый бак
14/5	Dajnik paliwomierza Fuel gauge transmitter Датчик топливомера	07740-30	Zbiornik prawy RH tank Правый бак
15/5	Rezystor Resistor Резистор	ML-0,5W-215Ω ±2%	Zbiornik lewy LH tank Левый бак
16/5	Rezystor Resistor Резистор	ML-0,5W-215Ω ±2%	Zbiornik prawy RH tank Правый бак
SP	Złącze Bond Разъем	SzRN-13a	Skrzydło prawe RH wing Правое крыло
SL	Złącze Bond Разъем	SzRN-13a	Skrzydło lewe LH wing Левое крыло

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Fig. 15

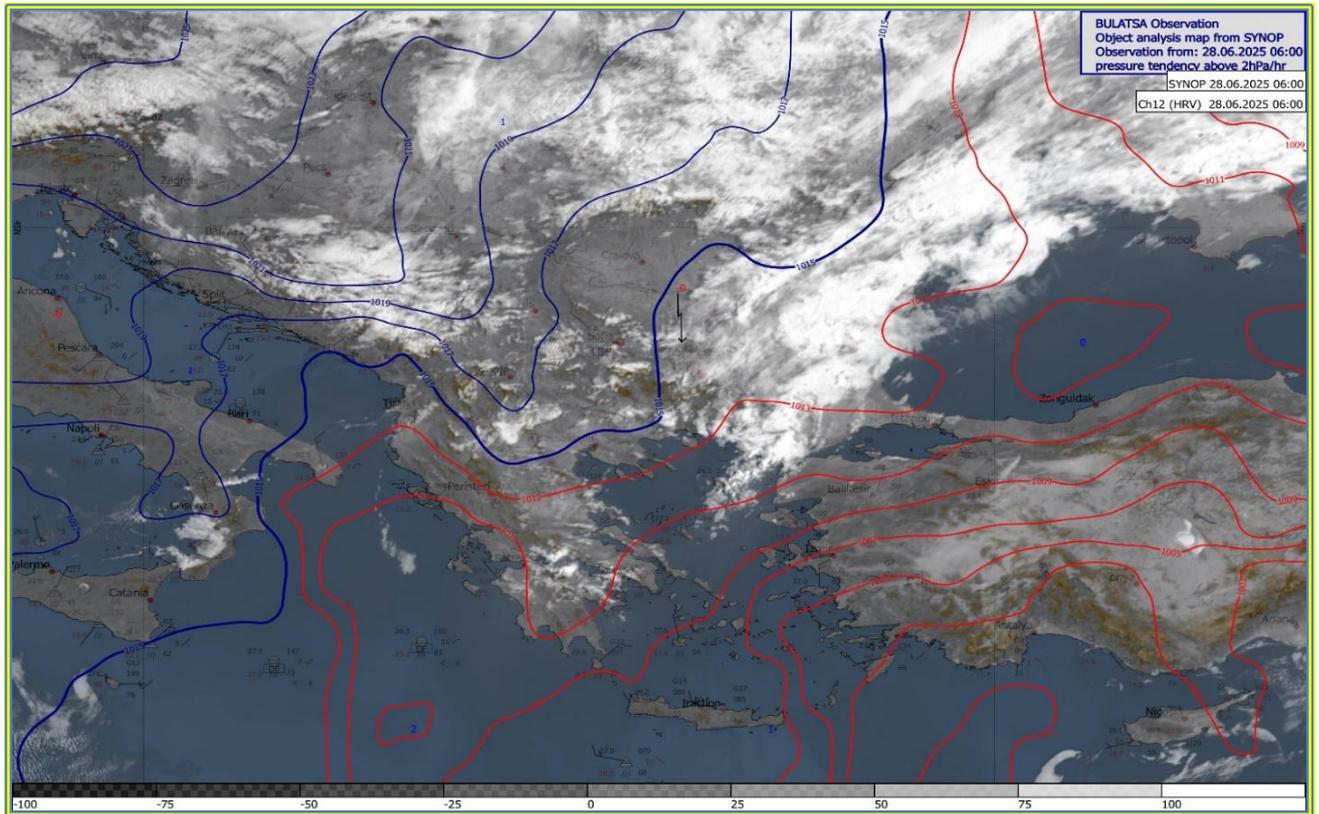


Fig. 16

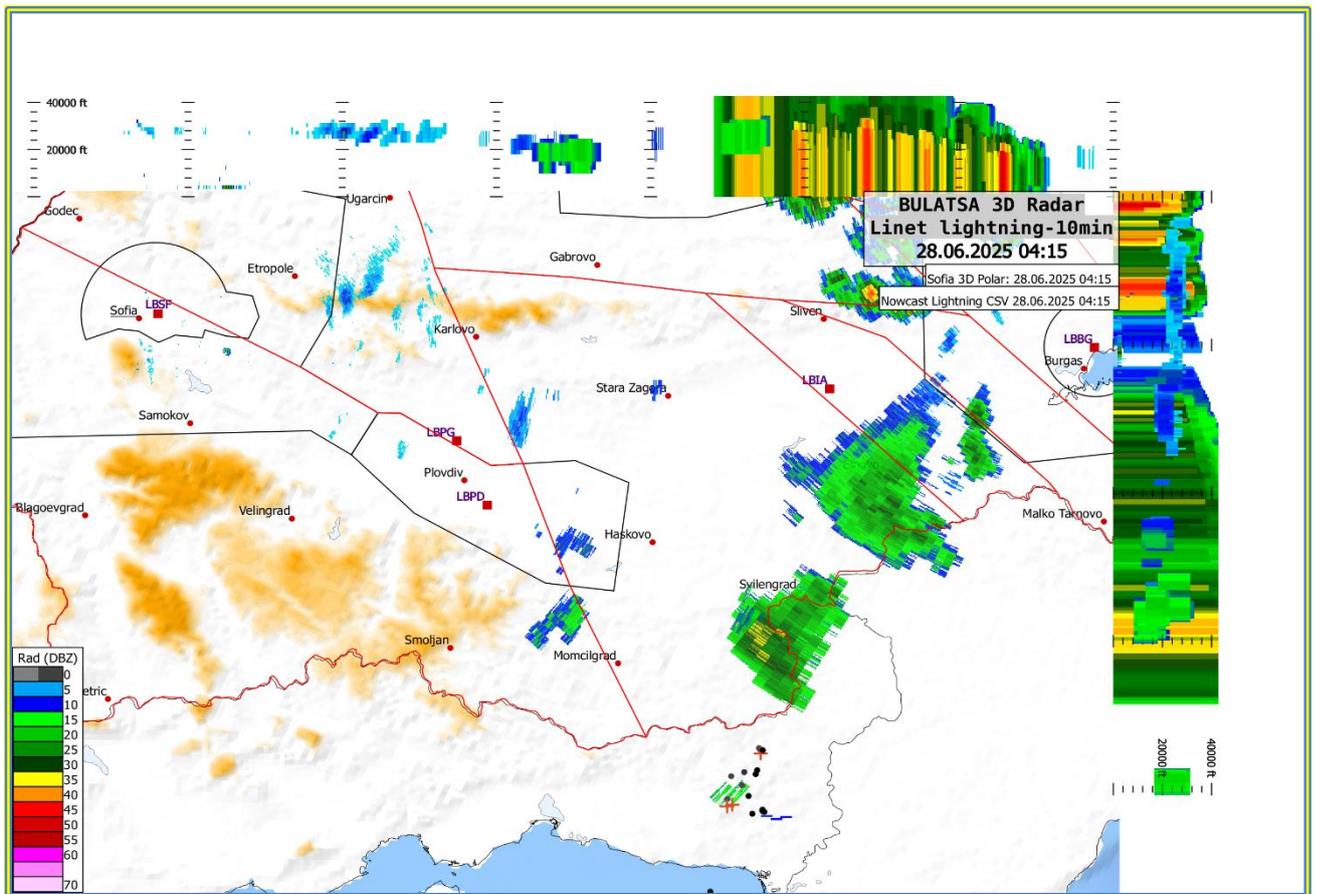


Fig. 17

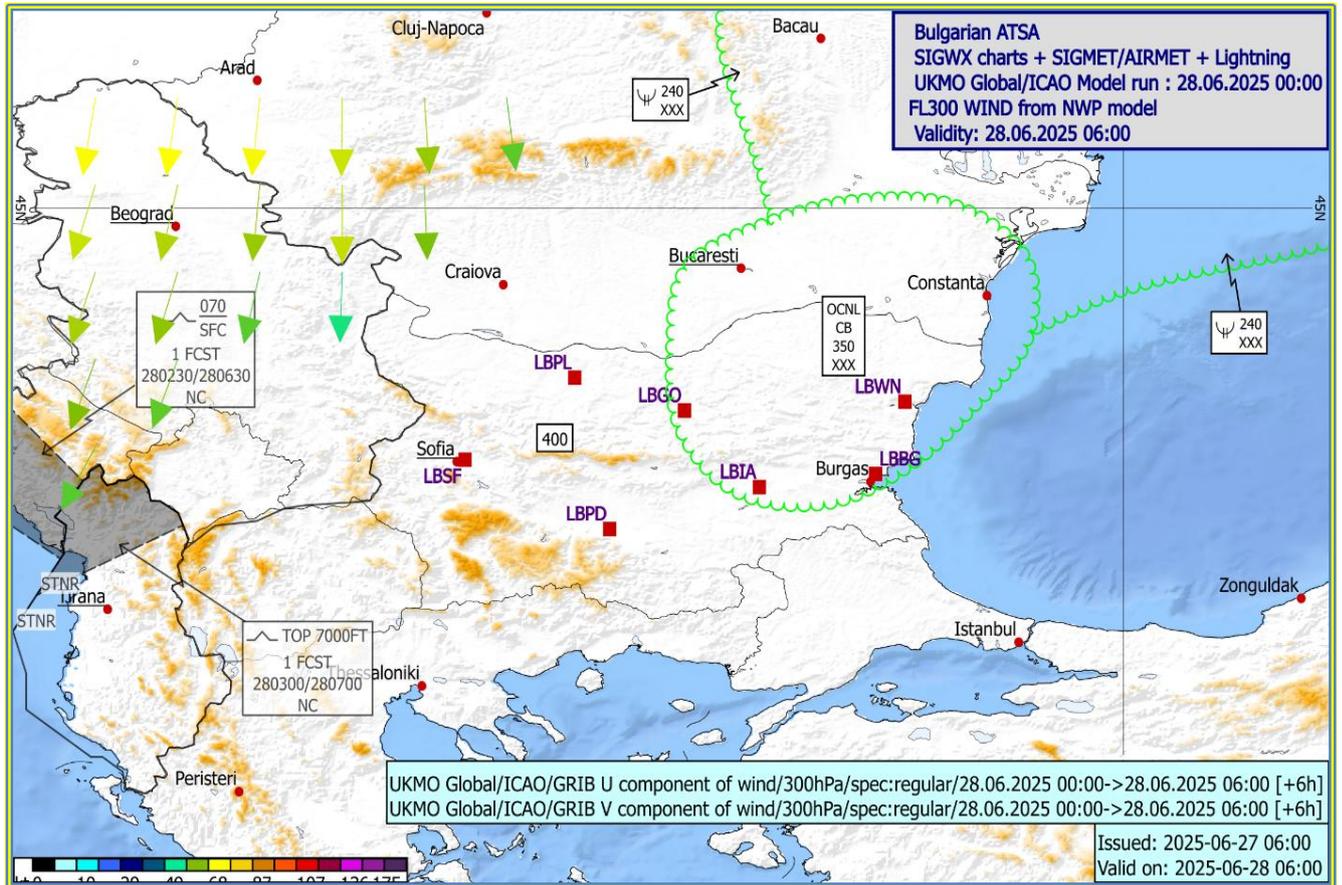


Fig. 18

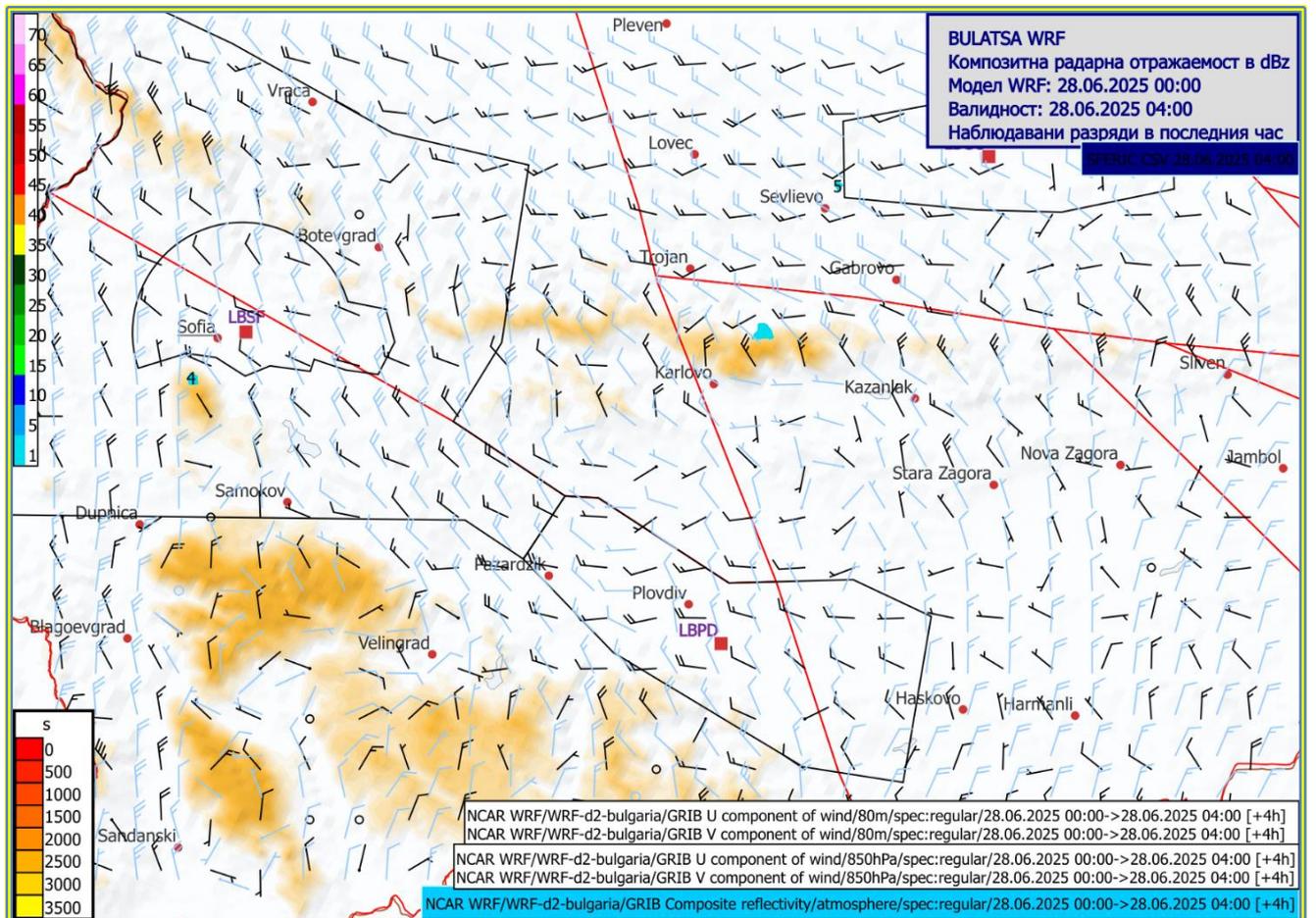


Fig. 19



Fig. 20



Fig. 21



Fig. 22