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FINAL REPORT

ON ACCIDENT OF THE AIRCRAFT Lake LA-4-200, 9A-DLA

Resnik near Split, 25 June 2015



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OCCURENCE INFORMATION

Type of the occurrence:	Accident
Date:	25 June 2015
Local time:	17:37
Place:	Beach of the tourist resort Resnik near Split
Type of the aircraft:	Aeroplane
Manufacturer / model:	Global Amphibians LLC / Lake L-4-200
Registration state:	Republic of Croatia
Registration:	9A-DLA
Owner:	European Coastal Airlines Ltd
Operator:	European Coastal Airlines Ltd
Number of persons aboard:	Three
Injuries:	Two fatalities and one injured person
Damage to the aircraft:	Destroyed



Picture 1 – flight area of 9A-DLA and the accident site (red circle)

INVESTIGATION

The first information about the accident AIA obtained from Croatia Control immediately after the accident. Immediately thereafter reports arrived from National Protection and Rescue Directorate – 112 Centre, Operational Communication Centre of the Ministry of the Interior and Split Airport.

AIA issued notification of the accident and opening of the investigation, and the investigators were sent to the accident site.



After the inspection at the accident site, the aircraft wreckage was moved to a closed hangar at Split Airport. There it remained until the completion of the investigative actions, after which it was returned to the owner.

As part of the investigation, statements of eyewitnesses and other persons important for the investigation of the subject accident were taken. Information and necessary documentation were collected and the necessary technical analyses were conducted.

After initial findings, and given clear indications, in further course the investigation was directed to the aircraft's power system and fuel system. In the later stage, the investigation was extended to the organizational aspect.

AIA has, in accordance with ICAO Annex 13, 30 days after the accident, issued a 'Preliminary Report' containing information about the occurrence and the findings at the early stage of the investigation. On the anniversary of the accident, AIA issued a 'Preliminary Statement' in which the information and findings collected in the past period were presented.

SUMMARY

On 25 June 2015 Split Airport requested that the aircraft is relocated from the general aviation apron to another parking position at the same airport. At 17:34 LT, three people took-off by the subject aircraft from Split Airport with the intention of carrying out four touch and go airport traffic patterns. The aircraft was an amphibian, therefore capable of landing at both airport runways and water surfaces.

Shortly after taking off, problems with the engine occurred and the aircraft lost the power.

After the engine failure, the pilot first directed the aircraft towards the airport and then towards the sea. In the final part of the access to the sea surface, the aircraft no longer had sufficient height to cross obstacles on the shore. It hit the roof of the building on the shore and crashed into the shallow sea near the coast.

There were three people on board the aircraft. After the accident one person was transported to the hospital in severe state and survived, while two people died. All three were pilots with great flight experience. The aircraft was completely destroyed in the accident and at the accident site there was also other minor material damage.

The subject aircraft was owned by the company 'Europski obalni avioprijevoznik d.o.o.' (European Coastal Airlines Ltd, hereinafter referred to as ECA), which was also the operator.

During the inspection of the aircraft and engine after the accident, a large amount of dirt was found in fuel filters and fuel reservoir, which presumably obstructed the fuel flow and caused the engine failure.

The investigation established the immediate causes of this accident – engine failure and inadequate pilot reaction in this situation. Detected contributory factors were omissions in maintenance of the aircraft, the incompetence of the pilot to land on the water surface, insufficient knowledge of the aircraft type and company culture.

In line with the conclusions and findings in the investigation, AIA issued safety recommendations to ECA, Split Airport and the Croatian Civil Aviation Agency.



1. FACTS AND INFORMATION

1.1. FLIGHT HISTORY

On Friday, 25 June 2016 Split Airport requested that the aircraft 9A-DLA is relocated from the general aviation apron, where it was parked, to the position in the maintenance area. The reason for the requested relocation was the expected increased traffic during the upcoming weekend.

The pilot 2 stated that on 25 June 2016 he received an information from his colleague, also a pilot employed with ECA, that it was necessary to relocate the aircraft 9A-DLA from the general aviation apron to the position in the maintenance area and for that reason he came to Split Airport.

The pilot 1, the pilot 2, the pilot 3, and the person 1 who before that flew on a small private aircraft of his acquaintance, met at the general aviation apron.

They noticed that the battery on the subject aircraft was depleted. In order to start the engine, they went to the hangar and brought a battery from another aircraft (Cessna) and cables and jump started the engine.

At 17:31 LT, the subject aircraft 9A-DLA reported to the air traffic control in Split. It reported that it was ready to taxi and to carry out four touch and go airport traffic patterns. At 17:33:51 LT it was cleared for take-off, meteo data: wind from direction 290, 8 knots and instruction to report final, after which it took-off.

At 17:37:18, the air traffic controller asked the subject aircraft whether it was planning to make a low-speed approach or an extended landing. Three seconds later, the aircraft 9A-DLA reported 'Split, full stop landing', to which it got from the controller the clearance to land on runway 23 and meteo data: wind from 280 °, 7 knots.

At 17:37:41 the controller reported 'The aircraft crashed'.

Based on the eyewitness statement, also a pilot, a flight sketch was made (Picture2). Part of the aircraft flight path with normal engine operation is marked green, and part of the flight path after the engine failure is marked red. The estimated aircraft altitude at the moment of engine failure, according to the eyewitness's statement, was 700-800 ft or just over 200 m.



Picture 2 – sketch of the flight path of 9A-DLA

The eyewitness who saw the crash (controller in the tower) stated that it seemed that in the last, left turn the aircraft stalled, turned over the left wing and vertically hit the sea.

For the subject flight, the flight plan was not provided. The aircraft pre-flight inspection was not recorded in the applicable aircraft documentation. The applicable documentation was not on the aircraft during preparation or during the flight.

1.2. INJURIES

Injuries	Crew	Passengers	Others
fatal	1	1	0
serious	0	1	0
minor/none	0	0	0

Although all three persons on board of the aircraft were active pilots and holders of valid pilot licenses, in the table above two persons are listed as passengers, while one, who at the time of the accident operated the aircraft, is listed as a pilot.

1.3. DAMAGE TO THE AIRCRAFT

In this accident the aircraft 9A-DLA was completely destroyed. The aircraft crashed into the shallow sea near the coast and remained lying in the water of about 1 meter of depth. There was no fire.



Picture 3 - Aircraft 9A-DLA wreckage at the accident site



1.4. OTHER DAMAGES

Immediately before crashing into the sea, the aircraft grazed the edge of the eaves of the hotel Resnik located at the beach, causing damage to several tiles. Eaves is about 3 m high and is located on the shore.

1.5. PERSONAL INFORMATION

We state personal information of persons connected to the subject accident and investigation. They are:

- Pilot 1 – at the time of the accident he was sitting in the front left seat. An employee of ECA. It is assumed that at the time of the accident he was operating the aircraft. Deceased.
- Pilot 2 – at the time of the accident he was sitting in the front right seat. An employee of ECA. He survived with severe injuries and permanent health consequences.
- Pilot 3 – at the time of the accident he was sitting in the back seat. An employee of ECA, Deceased.
- Person 1 – pilot of 'Twin Otter', an employee of ECA, foreign citizen. He was present at Split Airport during the preparation and starting of the engine of the Lake Aircraft on the day of the accident.
- Director of ECA (Managing Director)
- Director of ECA flight operations
- Person 2 - pilot, an employee of ECA, flew on the subject aircraft prior to the accident.

Note: all three persons who were on board of the aircraft at the time of the accident in this report were named 'pilots'. This is for the following reasons:

- Although it can be assumed that the aircraft was operated by a person sitting in the front left seat (the pilot 1), this cannot be claimed with certainty.
- All three persons were experienced professional pilots employed with the same airline company. Although the aircraft was operated by one person, by naming all three of them pilots, this report wishes to emphasize their equality in terms of competence. Also, it can be assumed that during the crisis situation, each of the three persons on the aircraft, tried to contribute in resolving the situation.

1.5.1. Pilot 1

A male person, Croatian citizen born in 1978. He was a valid CPL (A) license holder. He gained his flight experience on single-engine and twin-engine light aircrafts of general aviation (C-152, C-172, C-182, P-28RT). The pilot 1 had 2083 flight hours in 2722 flights. He never landed on water.

According to records in the Pilot Logbook, the pilot 1 has recorded one flight on the subject aircraft. The flight was made on 22 June 2015, three days before the accident, and took place from the city of Bari in Italy to the city of Split. It is recorded that the nature of the aforementioned flight was 'training/route' (TNG/RTE), it lasted 1:50', and the pilot 1 was registered as the pilot in command. Beside him, on the same flight there was a person 2, also a pilot and an employee of ECA, a Croatian citizen. In the Aircraft Log Book, there is also a record of this flight.

According to the Director of ECA flight operations, the pilot 1 was employed with ECA since 26 May 2015 and was waiting for the commencement of co-pilot training for DHC 6 aircraft. He underwent



refresh training for multi-engine aircraft at the authorized ATO organization and Conversion Course for DHC 6 within the company.

1.5.2. Pilot 2

A male person, a Croatian citizen born in 1975. He was a valid CPL (A) license holder, in which there was note an ATPL (A) Theory. The pilot gained his flight experience on single-engine and twin-engine light aircrafts of general aviation (BL-8 Scout, PO-2, U-75, C-172, C182, C-206 and PA-44-180 and PA-34) and has 1175 flight hours in 1867 flights.

According to records in the Pilot Logbook, the pilot 2 has no records of flights on LA-4-200. Also, there are no records on water landing/take-off.

In the Aircraft Log Book there are records on flights of pilot 2 on LA-4-200 aircraft, reg. 9A-DLA, as follows:

- 18 June local flight duration of 0:25', registered as training flight (TNG, LDSP-LDSP)
- 21 June flight duration of 0:15', recorded as route from Split to Sinj (RTE, LDSP-LDSS)

Therefore, the pilot 2 had two flights of total duration of 0:40' on the subject aircraft before the accident, and the flights were recorded as a training flight (TNG) and as a route (RTE). On both flights a colleague from ECA - person 1, also a pilot, a foreign citizen was with him.

According to the statement of Director of ECA flight operations, the pilot 2 was, as the pilot 1, employed with ECA since 26 May 2015 and was waiting for the commencement of co-pilot flight training for DHC 6 aircraft. He underwent refresh training for multi-engine aircraft at the authorized ATO organization and Conversion Course for DHC 6 within the company.

1.5.3. Pilot 3

A male person, a foreign citizen born in 1987. He was a valid CPL (A) license holder. The pilot gained his flight experience mostly on twin-engine DHC 6 Twin Otter aircraft. He had 3314 f flight hours in 3057 flights.

The pilot has no record of flights on LA-4-200. He is the only of three pilots who at the time of the accident were on board of the 9A-DLA aircraft who had experience in landing on water. On the subject flight, the pilot 3 was sitting in the back of the aircraft.

An employee of ECA, co-pilot on DHC 6 aircraft.

1.5.4. Person 1

A male person, a foreign citizen born in 1969. He holds an ATPL license with the recorded instructor license (IFR and Multi Engine), issued by the FAA. He gained his flight experience on over 100 types of aircraft, including gliders. He had a total of over 14,000 flight hours, approximately half of which on pistons engine aircraft, and half on turbine engine aircraft. By education, he is a mechanical engineer.

He was employed with ECA as a pilot on Twin Otter.

On the day of the accident, he was at Split Airport as he was flying recreationally a small private aircraft Polikarpov PO-2, which was kept at a hangar at Split Airport by his friend and the owner of the aforementioned aircraft. According to him, after a flight to Polikarpov, the pilot 2 informed him that the LA-4-200 aircraft should be relocated.



According to the Aircraft Log Book, in the days prior to the accident the person 1 made two flights on the subject aircraft, both with the pilot 2.

- 18 June local flight duration of 0:30', registered as training flight (TNG, LDSP-LDSP)
- flight duration of 0:25', recorded as route from Split to Sinj (RTE, LDSP-LDSS).

1.5.5. Director of ECA (Managing Director)

A male person, a foreign citizen, a pilot. Had around 28 flight hours on the subject LA-4-200 aircraft.

1.5.6. Director of ECA flight operations

A male person, a Croatian citizen, a pilot, in one year before the accident made a few flights on the subject LA-4-200 aircraft.

1.5.7. Person 2

A male person, an employee of ECA, a Croatian citizen, a pilot, made a few flights on the subject LA-4-200 aircraft before the accident.

1.6. AIRCRAFT INFORMATION

1.6.1. LA-4-200 – basic aircraft information

Manufacturer:	Lake Aircraft Division Consolidated Aeronautics Inc, USA
Type:	LA 4-200 Buccaneer
Capacity:	1 pilot and 3 passengers
Aircraft mass:	705 kg
MTOM:	1220 kg
Engine:	Lycoming IO-360-A1B
Propeller:	Hartzell HC-C2YK-1BLF
Maximum speed:	248 km/h
Cruise speed:	241 km/h
Average consumption:	38 l/h at 2000 ft and 2400 rpm
Range:	1328 km
Maximum flight height:	4480 m
Wing area:	15,79 m ²
Aircraft dimensions:	length – 7,59 m wing span – 11,58 m height – 2,84 m



Picture 4 – Aircraft LA-4-200 Buccaneer, 9A-DLA

1.6.2. LA-4-200 – description of the aircraft

Lake Buccaneer LA-4-200 is an amphibian aircraft which falls into the category of light aircraft (MTOW up to 2250 kg). It can carry a pilot and three more persons. It is designed for take-off and landing on water and land surfaces. It is equipped with retractable landing gear type tricycle for landing on the land runway. The underside of the fuselage is designed for taxiing on water surfaces and allows take-off and landing directly on the fuselage. The retractable landing gear is used for take-off and landing, as well as driving on land surfaces. When landing on the water, the landing gear must be retracted. The aircraft is powered by one air-cooled, four-cylinder boxer engine, and a two blade constant speed propeller. The powerplant is located on the engine mount behind and above the passenger cabin with propeller behind the engine in the so-called 'pusher' configuration. This makes the engine and propeller high enough to allow the aircraft to touch the water surface directly with the hull fuselage.

The LA-4-200 model started flying in the early seventies of the last century. The production lasted until mid-eighties, and a total of 600 pieces were produced. The purpose of this aircraft is recreational and tourist flying, especially in inaccessible areas with lots of water surfaces.



1.6.3. LA-4-200 – description of the power system of the aircraft

Lycoming IO-360-A1B engine is a four-cylinder, air-cooled boxer engine developing max 200 KS at 2700 rpm.

Ignition system consists of two magnets, two distribution cables and 8 spark-plugs, two on each cylinder. This kind of ignition system, though very old-fashioned, is one of the safest, and for this reason has been kept in serial production on a large number of piston aircraft until this day. Fully duplicate systems are independent of each other, the fact that the magnets function is independent of the aircraft's electrical network (does not require an external power source) and a very simple design, are the basic features of this system. The possibility that the aircraft completely loses its ignition system in flight, is reduced to a minimum.

The fuel distribution is carried out by direct fuel injection into the cylinders, and the fuel supply to the injector is carried out by using the engine fuel pump and an electric booster pump. The main advantage of direct injection is better and more regular dispersion of the fuel in the fuel air mixture. This improves the filling of the cylinder and fuel combustion, which influences favourably on the engine efficiency and performance, while reducing fuel consumption and harmful gas emission. Also, direct-injection aircraft are less likely to lose power due to icing, as opposed to a carburettor engines.

The lubrication system is of wet type, meaning that the oil is always in the engine housing and there is no external engine oil reservoir. Oil pumps and filters are used to filter oil and to distribute it to all moving parts of the engine.

The air cooling system consists of air routers which generate optimum airflow around the cylinder ribs within the engine compartment. The heat is transferred from the air cylinder which then exits the engine compartment through the openings on the engine linings. The oil is cooled by the cooler which transfer the excess temperature into the air that stream around it.

The engine is equipped with an electric starter and an alternator for supplying the aircraft with electric power.

The Lycoming IO-360 series engines are one of the world's most widespread and most reliable aircraft piston engines and are powering a wide range of aircraft from different manufacturers and purposes. They are produced in almost 100 different versions. They have been in use since 1953 and are still produced today. The time between the two general overhauls determined by the manufacturer is 2000 working hours or 12 years, whichever comes first.

On the aircraft Lake LA-4-200 the propeller is installed behind the engine in the so-called 'pusher' configuration, which means that the propeller 'pushes' the aircraft. In a classic aircraft configuration, where the propeller is installed in front of the engine, the propeller 'pulls' the aircraft.

'Hartzell HC-C2YK-IBLF propeller is a two-blade metal propeller of variable pitch, having a diameter of 74 inches. The crankshaft is directly connected to the propeller without a reduction box, therefore the engine speed is limited to 2700 rpm. The desired speed is determined by the position of the handle in the cabin connected to the governor.

The Governor is an oil pump that produces oil pressure of 200 PSI and is powered by the engine. Its main function is, by changing the pressure of the oil which supplies the mechanism inside the propeller, to control and change the pitch of the propeller blades, thus maintaining a constant engine speed. The oil pressure is used to increase the propeller pitch while the aerodynamic forces decrease the propeller's arms pitch. By changing the pitch of the blades it is possible to maintain the constant desired



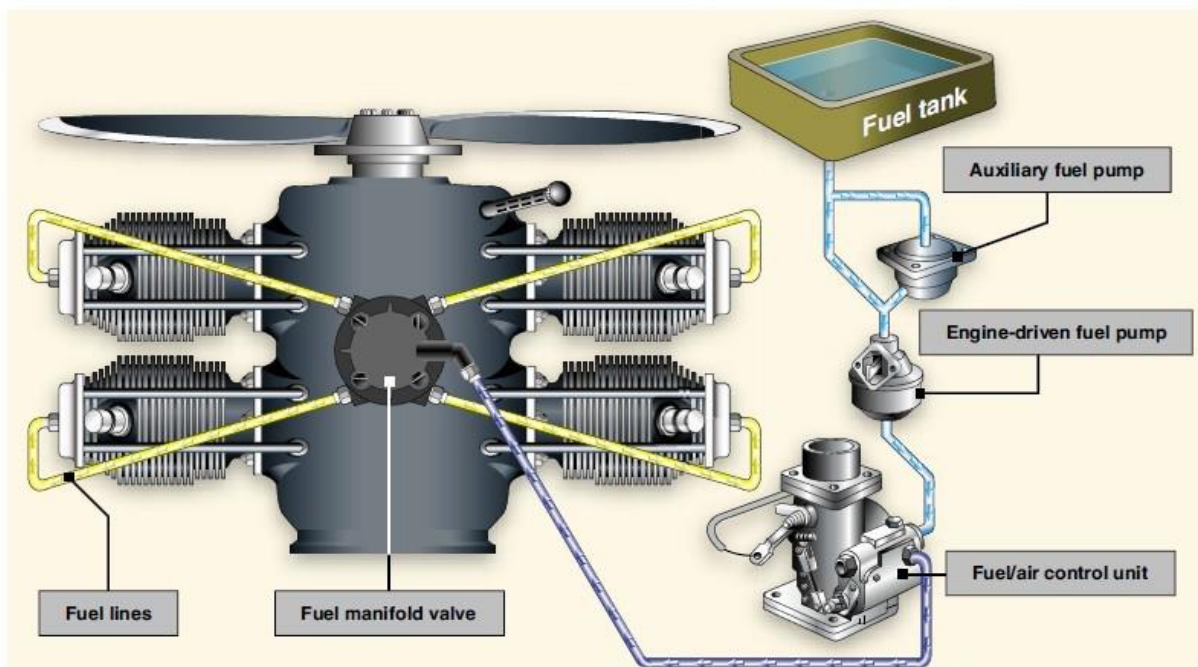
propeller speed, and thus the speed of the engine. With the ability to automatically change the impact pitch of the blades, it is possible to optimally achieve the maximum traction force of the propeller depending on the engine power change and the aircraft speed.

1.6.4. LA-4-200 – description of the fuel system of the aircraft and the engine

The fuel system of the aircraft Lake LA-4-200 consists of the following components:

1. Main fuel tank
2. Auxiliary fuel tanks
3. Mechanical engine driven fuel pump
4. Electric fuel pump
5. Injector
6. Distributor
7. Fuel injectors
8. Fuel filter
9. Valve selector
10. Drain valves
11. Fuel quantity and pressure indicator
12. Fuel lines

The main fuel tank is located in the central part of the fuselage behind the cabin space. It is made of rubber, and its capacity is 151L of usable fuel. The fuel filler cap is located on the left side of the fuselage behind the passenger cabin. The valve for draining of any water from the fuel due to condensation is located at the lowest point of the tank and it can be approached from the lower left side of the fuselage. The tank is connected to the atmospheric air from the top side through the pipe so as to avoid the formation of the vacuum in the tank while the engine is running, which would then make it difficult to supply the fuel to the engine. Also, the fuel filler cap has a small hole designed to equalize the pressure in the tank with atmospheric pressure. At the top of the tank there is installed electrical/mechanical fuel quantity transmitter with floats that provide information to the fuel tank indicator on the control panel of the current fuel quantity in the tank. The main fuel tank has a built-in net or a coarse filter for fuel filtration in the output line towards the engine, in order to prevent major dirt from entering the distribution part of the fuel system.



Picture 5 - Schematic presentation of a standard fuel system with direct injection

Two auxiliary fuel tanks are located in the floats for stabilizing the aircraft on the water located one on each wing. They are metal and the total capacity of usable fuel in both tanks is 53 l. They are also connected to atmospheric pressure for equalizing pressures. The container cap is located on the outer upper side of each float. Direct supply of the engine with fuel is not possible from these tanks, only refill of the main tank. The transfer of fuel from the auxiliary tanks to the main tank is carried out through two electric pumps (one per auxiliary tank) located in the wings and the fuel lines. Control of the pumps is made through a switch located in the left control panel in the cabin. Two blue control lights that light up when the pumps are running are located on the left and right of the switch. Fuel transfer is made after the quantity in the main tank is below half of the total capacity level. It is prohibited to transfer fuel from the auxiliary tanks to the main tank if the aircraft landed on the water, and it was not checked if there was water in the tanks, in order to avoid possible transfer of water to the main tank. The drain valve for checking and draining water from the tank is located at the lowest point of the tank. The aircraft is not equipped with the fuel indicator for amount of fuel in the auxiliary tanks, so the check is performed on the ground prior to the flight by visual inspection.

During regular operation, the engine is constantly supplied with fuel from the main tank using the mechanical engine driven fuel pump. The pump is of a diaphragm type, very simple and reliable installation, mounted on the rear part of the engine.

Since the engine is located on the pylon above the main fuel tank, when the engine starts, the fuel supply of the engine is carried out using the electric pump. The purpose of the electric pump is also to supply engine with the fuel in the case of the engine driven fuel pump failure. For this reason, the electric fuel pump should be running during take-off and landing phases, so as to avoid, at these critical flight phases, interruption of the fuel supply and loss of power or a complete engine failure, which could then lead to an accident due to insufficient time for timely pilot response. In this case, the electric



pump would take over the role of the engine pump and continue to supply fuel until landing. The electric pump ignition switch is located on the left side of the control panel.

The injector is the main component of the engine part of the fuel system. Based on the opening or closing of the air intake valve in the cylinders, the injector measures the required amount of fuel to be passed to the cylinder so that the air-fuel mixture is optimal for proper combustion. The opening and closing of the valve is made through the throttle in the cockpit. Also, the injector is connected to the handle for manual adjusting of the fuel and air mixture. Also, within the injector there is a filter for fine fuel filtration that should be periodically inspected.

After the injector, the fuel reaches a fuel distributor that distributes the fuel through the fuel lines to each cylinder separately.

After the distributor, the previously measured amount of fuel in relation to the amount of sucked air remains in the fuel line ready for the cylinder to suck it when a vacuum is generated due to the piston downwards motion in the suction stroke when both valves are closed. Suction is carried out through the injector installed in each cylinder head.

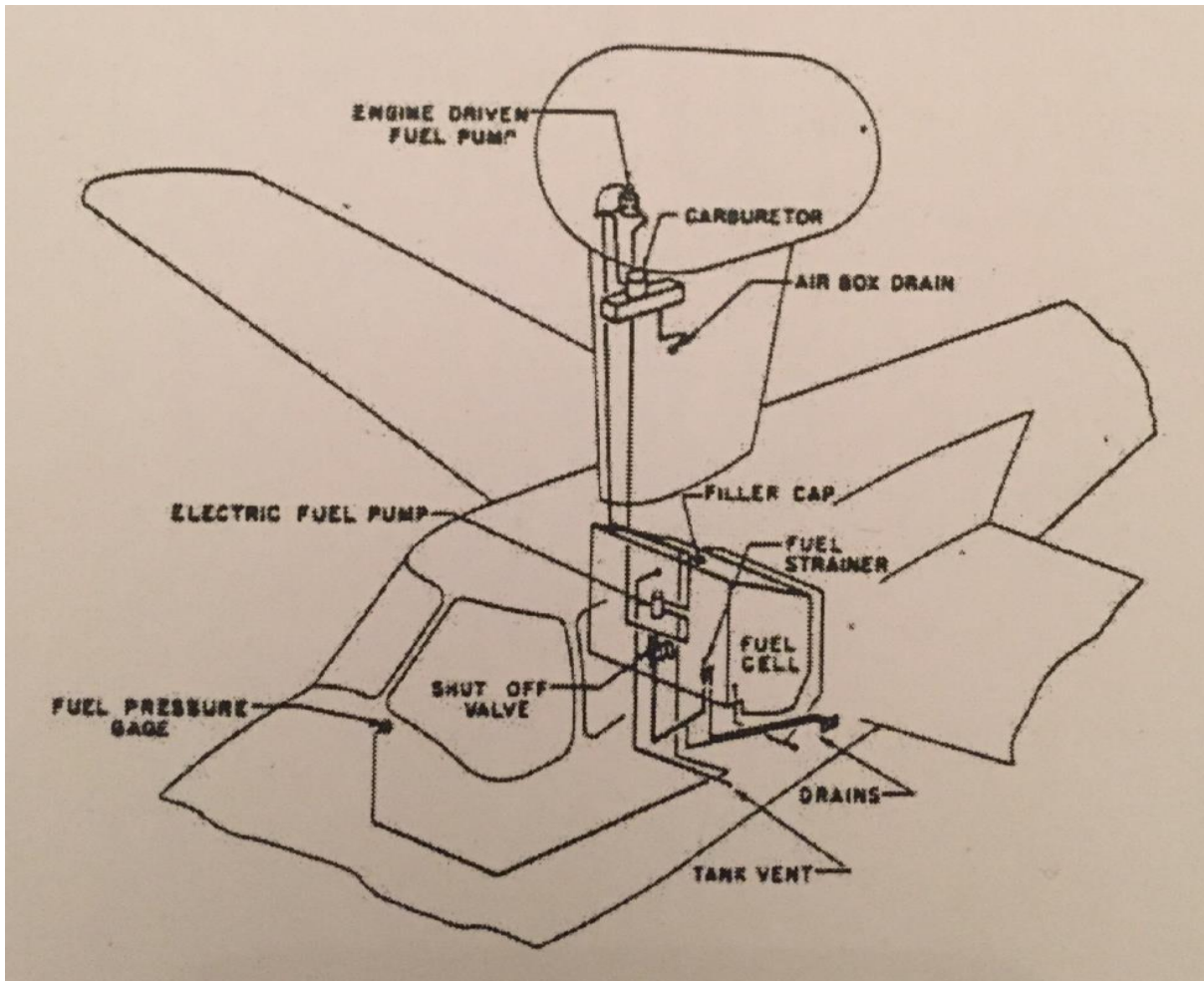
The main fuel filter is located in the fuel line between the electric and mechanical engine driven pump somewhere around the middle of the engine pylon/carrier. Its purpose is to purify fuel that is distributed to the engine. The filter should be periodically inspected and cleaned, and also replaced at regular intervals.

The fuel selector valve is located on the wall between the passenger cabin and the fuselage in the pilot's reach. Its purpose is to close the fuel supply to the engine in cases of emergency, e.g. fire of the engine or emergency landing, in order to prevent possible fire of the engine. In regular conditions the valve is always open.

Drain valves are located at the lowest point of the fuel tank and at the lowest point of the fuel line in the distribution line. Their purpose is to check and drain possible accumulations of water in the fuel system that could lead to loss of power or complete engine failure if it enters into the distribution system. Fuel check/drainage from all points must be performed before each flight, especially after prolonged aircraft stand or refuelling, and in the case of amphibious aircraft after operations involving landings on water.

In addition to the previously elaborated system for indication of the amount of fuel in the main tank, the aircraft is equipped with an indicator and a fuel pressure gauge in the distribution line of the fuel system. The fuel pressure gauge is located on the engine, and the indicator on the control panel.

The fuel line system is used to connect all the components in the distribution line, the lines for fuel transfer from the auxiliary tanks in the main tank and the ventilation system of the tanks and pumps.



Picture 6 - Schematic presentation of the fuel system components of the aircraft Lake LA-4. Note: The system with carburettor is presented

1.6.5. Experience with aircraft LA-4-200

Experience with the LA-4-200 suggests that the range of this aircraft without power is extremely small, which is further aggravated when making turns. Therefore, in the event of engine failure at low altitudes, it is not advisable to attempt to return to the airport. Experience shows that there is a greater chance of survival if the pilot chooses the best emergency landing location somewhere in the airplane flight direction, and the robust construction of the LA-4-200 can provide relatively good protection to persons on board the aircraft.

1.6.6. Aircraft LA-4-200 registration 9A-DLA, s/n 974

Aircraft serial number: 974
Engine serial number: 834228-R
Propeller serial number: CH39056B



1.6.6.1. History of the subject aircraft LA-4-200, s/n 974

The subject aircraft was manufactured in 1979. Over the next eight years, the aircraft flew in the United States and in this period had 426 flight hours. At the end of 1987, it was moved to Canada, where it was flying for less than four years and had further 464 flight hours, which makes total of 890 flight hours. In June 2001, the aircraft came to Europe and Croatia.

On 28 September 2001 the aircraft 9A-DLA flew to Airport Brač (Bol) (LDSB), where it will remain for the next three years, until August 2004. During that period, the engine run-up was made approximately once a month, and the aircraft made only one test flight on 26 November 2003 in duration of 5 minutes.

In September 2002 the subject aircraft was registered in the Croatian Register of Civil Aircraft under the registration number 9A-DLA. Then it had 906 flight hours. The company European Coastal Airlines Ltd. was registered as the operator.

In August 2004 the 9A-DLA flew to Bremen (Germany) for service. After performing service works in March 2005, the Aircraft Certificate of Release to Service was issued and the aircraft was returned to use.

In May 2005 the 9A-DLA flew from Bremen to Croatia. It landed at the Zagreb Airport and remained there for the next nine years. During that period, the aircraft did not fly and there are no records on engine run-up. At that point the total flight hours of the aircraft were 918:27.

In July 2014, after performing service works, the Aircraft Certificate of Release to Service was issued. On 18 August 2014 the Croatian Civil Aviation Agency issued the Certificate of Airworthiness and the 9A-DLA was returned to use. Service works were performed in Slovenj Gradec in Slovenia. There are no records of the flight of the 9A-DLA from Zagreb (LDZA) to Slovenj Gradec (LJSG).

After returning to use, 9A-DLA was parked for five months. In December 2014 it flew from Slovenj Gradec to Divača (Slovenia) and at the beginning of January 2015 from Divača to Split (LDSP). In Split the 9A-DLA was parked for the next five months. For both mentioned five-months parked periods, there are no records on engine run-up. At that point the total flight hours were 920:17.

On 24 May 2015 by the subject aircraft 9A-DLA two local flights with take-offs and landings at Split Airport were made. In the following month, several more flights with take-offs and landings at Split Airport and Sinj Airport were made. On some of those flights, the pilot was a person who later had an accident with the same aircraft (in this report referred to as the pilot 2).

It is important to mention that on 21 June 2015, when taxiing towards the runway at Sinj Airport, the engine of the aircraft suddenly stopped. The pilot immediately restarted the engine and the aircraft flew off. Upon landing at Split Airport, the pilot stated that he orally reported this to his superior in the company.

On 22 June 2015 a flight from Split to Bari in Italy and back was made on 9A-DLA. At that point the flight hours were 926. One of the pilots on that flight was also a person who had an accident several days later with the same aircraft (in this report referred to as the pilot 1).

On 25 June 2015 the 9A-DLA took-off from Split Airport with the intention of carrying out four touch and go airport traffic patterns. Shortly after taking off, it crashed into the sea.



1.7. METEOROLOGICAL INFORMATION

At the request of AIA, the Croatia Control provided the METAR report for Split Airport, dated 25 June 2015 for the period from 15:00 to 17:00 UTC (17:00 to 19:00 LT). The afore-mentioned report for the approximate time of the accident (15:30 UTC or 17:30 LT) reads as follows:

METAR LDSP 251530Z 24011KT 200V260 9999 FEW065 26/10 Q1018 NOSIG

At the time of the accident in the area of the Split Airport, the moderate wind of west to southwest direction prevailed with good visibility and without any meteorological events that could endanger the flight of the aircraft. Meteorological conditions were favourable for flying and had no influence on this accident.

1.8. NAVIGATION INFORMATION

During the flight on the day of the accident the transponder on 9A-DLA aircraft was not on since the flight took place at CTR of Split Airport. The flight altitude was too small for the primary radar to detect the aircraft. There are no radar records of flight of 9A-DLA on the day of the accident.

The GPS device that was installed on the subject aircraft did not have the option to record the flight track.

1.9. COMMUNICATION

The communication between the aircraft 9A-DLA and the flight control was in order. At the request of the Agency, for security investigation purposes the Croatia Air Traffic Control provided a transcript of the tone recording of the aircraft 9A-DLA.

1.10. AIRCRAFT FLIGHT DATA RECORDERS

The aircraft 9A-DLA was not equipped with the Flight data recorder (FDR) or the Cockpit voice recorder (CVR).

1.11. AIRPORT INFORMATION

Split Airport (LDSP) is the second busiest airport in Croatia. It is located in the area of Resnik on the west side of the Kaštel Bay, 25 km from Split, at an altitude of 24 m. This is an international airport where most of the traffic takes place in the summer during the tourist season.

At Split Airport there is permanent air traffic control, fire department, customs and police service and all other services required for the international airport.

The runway of this airport is 2550 m long and 45 m wide. It is asphalted and extends in the direction of 50°/ 230°.



Picture 4 – Airport Split (LDSP)

After the subject accident, at the initial stage of the investigation, Split Airport gave significant support to the safety investigation conducted by AIA.

1.12. OPERATOR INFORMATION

Operator of the aircraft 9A-DLA was the company 'European Coastal Airlines' (ECA), or in Croatian 'Europski Obalni Avioprijevoznik d.o.o.' with its headquarters in Kaštel Štafilić, near Split.

ECA was established in 2000 by a Croatian company 'Coastal Capital Investments Ltd' (Cro. 'Obalna kapitalna Ulaganja d.o.o.') from Zagreb and a German company 'European SeaPlane Service GmbH' from Landsberied. At the time of its establishment, the company possessed two aircraft. These were LA-4-200 which was registered in the Croatian Register of Civil Aircraft and Grumman Goose, which was registered in the Canadian register.

ECA began with the operation of air transport in 2014, after obtaining the required permits. The first connection was between Split and Jelsa on the island of Hvar, followed by the opening of connections towards other destinations along the Croatian Adriatic coast and islands and the connection to Italy.

At the time of the accident, ECA had concession contracts for construction and operation of water terminals on a number of attractive locations along the Croatian seashore. The company employed around hundred people, thirty of which were pilots, mostly foreigners.

At the time of the accident, the fleet of the company consisted of six aircraft. Four DHC-6 Twin Otter aircraft were intended for commercial operations. They were equipped for take-off and landing on water surfaces, and two of the four mentioned aircraft could also operate from the land.

The purpose of the aircraft Lake LA-4-200 registration 9A-DLA was, according to the statements of ECA responsible persons, to provide technical support to other company aircraft, i.e. rapid arrival to the location and intervention in the event of malfunction of any the aircraft flying commercial operations. According to the same persons, the aircraft Lake LA-4-200 was not intended for commercial operations.



1.12.1. **Comments and remarks of the operator to the draft of the Final Report**

Pursuant to the provisions of ICAO Annex 13, upon request of the company ECA, we enclose comments of ECA to the draft of the subject Final Report.

1.13. **INFORMATION ON IMPACT AND REMAINS OF THE AIRCRAFT**

The aircraft 9A-DLA crashed next to the Resnik tourist resort, which is about 700 m straight line away from the threshold of runway 23 of the Split Airport. In the south-eastern part of the Resnik resort there is a restaurant building with eaves. When falling the aircraft 9A-DLA grazed the aforementioned eaves and then it crashed into the bay, few meters away from the shore.

Due to crash the 9A-DLA was completely destroyed. It remained in a shallow sea at a depth of about 1 m. The aircraft engine was partially immersed in the water. At the accident site there was a strong smell of fuel. Firefighters surrounded the accident site with protective buoys in order to protect the surrounding area from pollution. There was no fire.

After the accident site inspection, the wreck was transferred to a protected hangar at Split Airport. There it remained until the completion of investigative actions on the remains of the aircraft and its power system, after which the remains of the aircraft were returned to the owner.

1.14. **MEDICAL AND PATHOLOGICAL INFORMATION**

Two out of the three persons on the aircraft (the pilot 1 and the pilot 3) died at the accident site. One person (the pilot 2) has suffered life-threatening injuries and was urgently transferred from the accident site to the Clinical Hospital Centre Split. That person (the pilot 2) survived.

1.15. **RESCUE AND SURVIVAL ASPECTS**

At the accident site, first aid was provided by the civilians who were on the nearby beach. Soon after, the emergency medical staff arrived who took the necessary steps to keep alive the severely injured pilot 2 and pronounce the death of the pilot 1.

Upon arrival of firefighters from Split Airport, a wreckage was cut to reach the persons on the aircraft. The pilot 2 who was in the right seat was released from the wreckage and taken to a hospital in Split. It was then established that there was a third person (the pilot 3) on the back seat of the aircraft, who did not survive.

1.16. **TESTING AND LABORATORY TESTS**

A preliminary aircraft inspection was performed at the accident site before the aircraft was removed. After the inspection, the remains of the aircraft were transferred to the hangar at Split Airport. Further inspection of the remains and powerplant of the aircraft were carried out there.



1.16.1. Preliminary inspection of the aircraft at the accident site

The aircraft was inspected on the accident site on 26 June 2015 by an AIA investigator, employees of the Ministry of Interior and employees of the company Aero Standard d.o.o.

Upon arrival at the accident site, it was established that the aircraft was moved from the crash point. Gathering of smaller parts and remains of the wreckage that were in the sea was still in process. It was established that when crashing the aircraft grazed with one wing the eaves of a restaurant building located within a tourist resort and crashed near the coast at a depth of about 1 m. By inspecting the photographs taken by the police before moving the aircraft, it was established that the engine was almost completely immersed in the sea. Furthermore, it was established that the aircraft suffered significant mechanical and structural damages. From the damages it could be concluded that the aircraft hit the sea at a great angle, almost at the same time with the left wing and nose. The cabin in the nose of the aircraft suffered the greatest damages. Parts of the cabin area were cut after the fall to allow bodies of injured and deceased persons to be removed from the aircraft. Since the Lake aircraft are known for their robust and firm construction, the aircraft damages point at an impact of a great strength.

For safety reasons, the battery of the aircraft was removed and immediately thereafter inspected in details. The battery was also immersed into the sea and suffered minor mechanical damages. By measuring the battery voltage, it was established that it provides 6 instead of a minimum of 12 V. Since the battery and almost most of the aircraft's electrical equipment were immersed into the sea, it was not possible to determine whether this condition existed prior to the accident.

Also, emergency locator transmitter (ELT) has been removed. It was established that Ameri King AK-451-AF model was used and that the activation switch was in the "ARM" position. At the time of inspection, the device was not activated, although due to the impact it should have been activated automatically. It was established that the built-in internal battery in the ELT device is valid until 8th month of 2018.

There was GPS device type GPS/COMM Apollo GX60 installed in the aircraft which does not store aircraft track.

The aircraft configuration at the time of the accident was attempted to be determined. It was established that the handle for moving the flaps on the hydraulic panel was in the up position as well as the handle for extending and retracting the landing gear. The ignition switch on the electric hydraulic pump was broken and it was not possible to determine its position.

The pump handle for manual extending of the landing gear in case of emergency was put back and locked. The right leg of the landing gear was loosened and half extended while the nose and left leg were retracted, but it was not possible to determine if they were locked or not. By examining the pictures from the accident site, it was established that both the flaps and the landing gear were in the retracted position.

Also, it was established that the command system suffered significant mechanical damages. Therefore, it was not possible to ascertain whether at the time of the accident the command system was in order, however, based on other available information, it can be assumed that it was.

After the preliminary inspection of the remains of the aircraft, and for reasonable doubt based on testimonies of competent witnesses on the engine failure, the further technical analysis focuses on the powerplant and the fuel system of the aircraft.



1.16.2. Analysis of technical accuracy of the power and fuel systems of the aircraft

By examining the configuration of the engine controls and switches related to the engine operation in the aircraft cabin, the following was established:

1. The master switch was completely destroyed and it was not possible to determine its position at the time of the accident,
2. The alternator on/off switch was destroyed/broken,
3. The electric pump on/off switch was destroyed/broken,
4. The key in ignition system (magnet) and activation of the starter when starting the engine was in the 'OFF' position. The key was bent under almost 90° but was completely embedded in the lock,
5. The throttle was broken, but it was positioned at the idle position on the engine,
6. The handle of correction of mixture was in the nearly rich position, both on the control panel above the pilot's head and on the injector,
7. The propeller speed correction handle was in the position for maximum propeller speed (Max RPM), both on the control panel above the pilot head and on the propeller governor,
8. The main fuel tap was in the open position.

In order to eliminate the possibility of the engine failure due to insufficient fuel or problems in fuel supply, the status of the aircraft's fuel system was checked.

It was established that the main fuel tank was not ruptured and there was still fuel in it. The fuel was drained through the drain valve on the lower side of the fuselage and it was established that there was less than 60 litres of fuel in the main tank. No water sediments were found in the fuel. The cap of the tank and the drainage line of the area where the cap is located were also examined. The line was passable, and corrosion marks were found on the cap.

Both auxiliary tanks suffered mechanical damage due to the crash of the aircraft and were ruptured. It was not possible to determine whether there was any fuel in them and whether this fuel was used during the flight. Given the nature of the flight (airport traffic patterns) and the very short flight duration, it can be assumed that, although it may have been available, that fuel was not used.

Drain valves on all three tanks were found to be in proper condition.

The fuel line from the main tank to the engine driven pump was not damaged. At approximately half way between the main tank and the pump in the main line, there was a main fuel filter for purification.

By examining the fuel filter, a mixture of fuel and water, most likely sea water, was detected. In the inside of the filter housing and the filter itself, a greater amount of corrosion was found, most likely caused or intensified by the influence of salt from sea water. Also, contamination of filter of brown and black colour dust-like and shreds due to the influence of corrosion (Picture 33 in red circle). It can be assumed that seawater entered the fuel system through the injector considering that after the crash of the aircraft the aircraft was immersed in the water for several hours and bearing in mind that no traces of water were found in the main tank.

Visual inspection of the engine driven fuel pump and the injector and the complete engine fuel system detected no irregularities.

It was decided that a detailed inspection and analysis of the engine part of the fuel system should be performed in the workshop where all the required equipment is available.



After inspection of the fuel system, the engine was inspected in order to establish if there was any mechanical damage inside the engine that could have caused the engine failure.

The propeller was first examined and it was established that it was completely undamaged. Also, the engine was externally inspected and it was established that during the crash of the aircraft it did not suffer any major mechanical damages. There were no irregularities detected on the air guidance plates, as well as on the engine cowlings, except for mechanical damages caused by the crash of the aircraft.

The only important damaged part was a cracked oil cooler, due to which the cooler remained hanging on flexible lines for oil inlet and outlet. The cooler was damaged but not perforated. Neither the cooler nor the engine had any visible traces of oil leakage.

Visible traces of leakage were noticed on the remaining of the cabin roof plating and the left side of the fuselage below the engine. They leaked from the oil separator that was most likely damaged during the crash of the aircraft. By inspection of the oil level, it was established that there was sufficient quantity of oil in the engine for proper engine operation and that therefore the insufficient quantity of oil certainly was not cause of the engine failure. It should be mentioned that within the engine housing, except for oil, there was also sea water, which was to be expected since the engine was immersed into the sea.

In order to more accurately exclude the possibility of mechanical damage of the engine which would cause the engine failure, the oil filter was dismantled and cut, which is performed on every regular 50-hour engine inspection. No traces of metal filings were found in the filter that would indicate excessive wear of some of the engine components.

Compression

The propeller could rotate without signs of mechanical braking or any sounds that would point to some internal damage. The compression resistance of each cylinder was the same for all four cylinders, which indicated a proper state of the reciprocating engine system. To confirm this, a compression measurement of each cylinder was performed and the following measurement results were obtained:

- Cylinder no 1: 80/72 PSI
- Cylinder no 2: 80/72 PSI
- Cylinder no 3: 80/70 PSI
- Cylinder no 4: 80/70 PSI

Although the compression measurement is usually performed when the engine is warm, the experience shows that the results between the cold and the warm engine vary by about 10%. Therefore, with a warm engine, these readings would be 10% higher, which would mean that the compression of the engine is in excellent condition, and even with the cold engine is within the allowed limits. This confirms that the reciprocating engine system is in excellent condition, which is to be expected, since from the general overhaul until the time of the accident, the engine had only 8 flight hours. From all of the above it can be concluded that the condition of the reciprocating system was not the cause of the engine failure.

Ignition system

For the purpose of inspection of the ignition system, the spark plugs have been dismantled and by inspection of the same it was established they were in good condition. In the cylinders numbers 3 and 4 there was penetration of seawater, as after the crash of the aircraft, they were completely immersed



into the sea, unlike cylinders numbers 1 and 2. The cables from the magnet up to the spark plugs were inspected, and all except for one were found to be in proper condition. The aforementioned one cable from the right magnet was interrupted at the very output of the magnet, most likely due to the breaking of the front plating of the engine cover during the crash. Having in mind the fact that each cylinder has two spark plugs, each connected to one magnet, even if the cable to one spark plug from one magnet was interrupted, the ignition on that cylinder would still work through another magnet and other spark plugs. The caps of the magnet were removed and it was established that the sea water penetrated into the magnets and caused the formation of gelatinous emulsion, most likely due to the oxidation of materials from which the magnet was made. It was not possible to determine the correct angle of ignition due to damage caused by penetration of seawater into magnets.

By inspection of the ignition system it was concluded that due to damages caused by the penetration of seawater into magnets and mechanical damages (interruption of the ignition cable), it was not possible to determine with certainty the correctness of the ignition system at the time of the accident. It should also be mentioned that check of the ignition system is a standard procedure before taking-off. Considering the fact that there were three professional pilots on the aircraft, it is unlikely that they did not check the ignition system before taking-off. Taking into consideration that the earlier mentioned advantages regarding the reliability of this system, the possibility that engine failure has occurred due to ignition system is reduced to minimum.

Fuel filter

The available technical documentation was checked and detailed analysis of all engine failure options was performed. It was discovered that on 30 August 2013 the Federal Aviation Administration (FAA) issued a warning in the form of a special bulletin regarding the airworthiness number CE-13-44, related to aircraft Lake LA-4-200. This bulletin warned all owners, operators and personnel involved in maintenance of these aircraft, about the possible aircraft safety endangerment due to loss of engine power during take-off due to insufficient fuel flow for smooth operation of the engine. Furthermore, it was stated that in the past a large number of notifications about the mentioned problems on this type of aircraft were received which could lead to an accident. It was stated that originally the aircraft was installed with the fuel filter of Bendix manufacturer, model: 450-OK, which has the ability to filter from 40 microns and a maximum flow of 20 gallons per hour. This filter is no longer being produced, and its main flaw was that it is installed in a horizontal position, which prevents the sediments of water to drain properly and they are rather accumulated in it.

Also, this type of filter does not have the possibility of "bypass" through which the fuel could be supplied to the engine if the filter for any reason becomes clogged. Therefore the FAA warns and recommends that the existing filter be replaced with a different type of filter with better flow and which is equipped with a bypass system. The option is provided for the filter to be installed in the same place where the original filter was installed or under the main tank. By placing the filter below the main tank, the possibility of drainage is further enhanced and the possibility of sedimentation of water in the filter is reduced. Both procedures have been previously approved by the FAA. They recommend that this modification is carried out within the next 25 hours of flight from the date of issuance of that bulletin. Also, it is again emphasized that pilots need to strictly comply with pre-flight inspection procedures prescribed in the pilot operating manual from the manufacturer with a particular emphasis on the importance of the fuel system drainage. They also emphasize that the use of an electric fuel pump during take-off is mandatory. They also state that the filter should be regularly checked or changed every 100 hours of flight or once a year, whichever occurs first. Finally, they list contacts that



need to be notified if someone has knowledge of similar events on this type of aircraft. On 2 September 2013 the same bulletin was adopted and published by the European Aviation Safety Agency (EASA) under reference EASA SIB CE-13-44. It is questionable whether the operator, the pilots and personnel involved in subject aircraft maintenance were aware of the existence of this warning.

It was established that the mentioned filter type Bendix 450-OK was installed in the aircraft which is subject to this analysis. This information narrows the analysis to the fuel system as the most likely cause of engine failure.

1.16.3. **Inspection at the hangar of the company 'Aero standard' – inspection of the powerplant**

The propeller was dismantled and the engine was separated from the engine mount and the cowlings and lifted to the crane in order to allow access to the components of the fuel system. Before their removal, all components and fuel lines were inspected in details while installed, without any anomalies being detected.

After that the engine driven fuel pump was removed and drive gear of the pump and the interior of the engine housing where the pump was located were inspected in details. Everything was in order and without any finding. Then the complete pump was disassembled. It was concluded that at the time of the accident the engine driven fuel pump was in order and that it did not cause or contribute to the engine failure. By reviewing the technical documentation, it was established that the pump was replaced during the general overhaul of the engine in May 2014 and that since it had about 8 flight hours.

The injector and the handle of correction of mixture, and the butterfly inside the injector were visually inspected, without any anomalies. The filter within the injector was removed, and it was found to be correct and that there was no dirt in it. The general injector overhaul was made during the general engine overhaul and since then it was in use until the accident for about 8 flight hours. It was concluded that the injector was in proper condition at the time of the accident, and that it did not cause or contribute to the engine failure in flight.

By inspecting the engine driven fuel system, it was established that the same was, in addition to oxidation/corrosion caused by the reaction of seawater, in excellent condition and that it did not cause or contribute to the engine failure in the air.

Beside the fuel system, the entire engine group was examined in detail. It was evident that everything has recently been refurbished or installed new and was installed to a satisfactory level and within the set professional standards. No anomalies were found which would indicate something that would cause or contribute to the engine failure in the air.

Fuel tank

During the detailed visual inspection of the main fuel tank, it was noted that a very large amount of dirt was accumulated at the lowest point of the tank (Picture 58). In the same place there was a filter that prevents coarse dirt from entering the fuel system prior to the main filtration in the main filter. The main fuel tank was removed in order to perform more detailed inspection of the accumulated dirt. In this type of aircraft, the same is made of rubber, and access to the tank itself for dismantling is extremely limited. After removal a large amount of dirt was confirmed, by its appearance and composition the same as the ones found during inspection of the fuel filters. It was established that



dirt was mostly the product of corrosion of metal components inside the tanks and to a lesser extent sand.

The fuel quantity indicator in the main tank was also completely corroded. By inspecting the technical documentation, it was established that the main tank was last examined for dirt, leaks and general condition on 10 July 2014. During the above inspection, there were no findings regarding dirt in the main tank. Since then, the aircraft flew for about 8 hours.

By inspection of all the fuel lines, no anomalies were detected.

By inspection of the fuel pump, it was established that its electrical parts, due to the influence of sea water, were completely corroded and thus blocked. It was not possible to determine its condition at the time of the accident. By inspecting the technical documentation, it was established that in July 2014 a new pump was installed and that until the time of the accident it ran for about 8 hours.

1.17. ADDITIONAL INFORMATION

1.17.1. Maintenance of the aircraft Lake LA-4-200 registration 9A-DLA

The maintenance plan of the subject aircraft 'Maintenance Program Lake LA-4-200' was approved by the Croatian Civil Aviation Agency on 25 July 2014.

The maintenance was performed by an authorized maintenance organization registered in Slovenia.

The company ECA hold CAMO organization approval for the purpose of continuing airworthiness of the aircraft. The aforementioned approval was issued by the Croatian Civil Aviation Agency.

The last maintenance was performed on 10 July 2014. According to the maintenance program, the following items should have been carried out as part of the last maintenance:

- Fuel system – Inspect fuel tank area for damage, leaks, corrosion and general condition
- Fuel system – Inspect fuel bladder for security, contamination, leaks and general condition.

The said two items were not signed off by authorised persons as performed.

1.17.2. Statements

Director of ECA flight operations

He stated that he himself had flown on Lake for about 2 h, the Person 2 about 5 h, and the Director of ECA flew the most.

He stated that pilot training plan for Pilot 1 and Pilot 2 did not foresee their training for the aircraft Lake-4-200.

Person 2:

On 22 June 2015 he performed the flight LDSP - LIBD and back, together with the Pilot 1. Upon their return, they left the aircraft in the position where the parker placed them.



The day after, on 23 June 2015, he arrived on the aircraft in order to refuel the aircraft so that it could be ready for the next flight. According to his memory, he filled 123 l of fuel, and the aircraft remained where it was.

Safety manager ECA:

He stated that there was no information, written or oral, that the aircraft would be flown that day. Therefore, there is no documentation on the preparation and planning of the relevant flight.

The training plan does not exist since on that day the training was not planned nor was it conducted, and ECA is not the Approved Training organization.

Person 1:

The Pilot 1 was sitting in the left seat, the Pilot 2 in the right, and the Pilot 3 in the back. He said that the Pilot 1 was operating the aircraft. He was there when they performed a jump start. They brought the battery from one Cessna, and he brought the cables out of the car. He said that the airport was requesting that the aircraft is relocated from the general aviation position to the maintenance position due to a traffic that occurs during the weekend (25 June 2015 was Friday). He said that he did not watch the take-off, because when the aircraft taxied away, he was collecting the things (cables, battery from Cessna ...).

Pilot 2:

The Pilot 2 stated that on 25 June 2015 he arrived to Split Airport because he was invited by Person 2 due to relocating the aircraft LA-4-200 from one parking position to the other at the same airport. The Pilot 2 was instructed to relocate the aircraft by the Person 2 orally and he was not aware who and by which means requested this from the Person 2. Him, the Pilot 1, the Pilot 3 and the Person 1 met by the aircraft. All four of them were pilots with great experience. After that he does not remember anything until he woke up in the hospital, several days later.

He stated that the Director of the company told him to fly on the Lake as much as possible. It was the company's practise, as far as the Lake was concerned, to 'take the key and fly'. It was no practice that the flight is approved by a responsible person or that flight order is issued. He stated that in one month, for how long he was an employee of the company before the accident, he generally did not see any order or other document for the purpose of approving or referring any aircraft and crew to the flight.

He did not undertake conversion training nor was it recorded in the pilot logbook for that type of the aircraft. As far as he was aware, none of the ECA pilots that flew the Lake in the past month (the Pilot 1, the Person 1, the Person 2 and the Director of ECA flight operations) had such trainings. He stated that, as far as he was aware, the company did not plan to conduct conversion to aircraft Lake LA-4-200.

The Pilot 2 also stated that several days prior to the accident, he and the Person 1 flew the Lake from Split to Sinj, landed on the Airport Sinj and then flew back to Split. At the Airport Sinj, during taxiing to the runway before taking off, the engine on the Lake suddenly stopped. After that, they immediately restarted the engine, which continued to operate normally.



1.17.3. Occurrences that endanger the safety of air traffic

During July and August 2016, AIA received three aviation safety reports on occurrences that endanger the aviation safety, related to ECA. These events were not directly related to the subject aircraft; however, they point out to events and mode of operation of the company that is the operator.

The first report was received from ECA through the mandatory occurrence reporting, while the remaining two were received through a voluntary reporting system, in which the reporter remains anonymous.

Occurrence Report no.1

On 24 July 2016, during taxiing, the left rudder control cable on the DHC6 'Twin Otter' registration 9A-TOB passenger aircraft, which the ECA used for commercial operations - passenger transport, broke.

Occurrence Report no.2

The report was received at the beginning of August 2016 through a voluntary reporting system. The reporter, who remained anonymous, pointed out to a series of irregularities within the company ECA. The mentioned irregularities relate to the maintenance and flight operations of the aircraft used by the ECA, as well as to the relations between the employees of the company.

Occurrence Report no.3

The reporter stated on termination of employment of four employees of the company (three pilots and one mechanic), for suspicion that they were sending the 'Air Safety Reports' to the competent authorities, the EASA and the Croatian Civil Aviation Agency, suggesting omissions that endanger the safety of flight operations. As a reason for the employment termination, according to the reporter, the alleged alcohol consumption is mentioned.

The reporter further stated that the employees did not have any legal protection for reporting the previously mentioned safety issues within the ECA.

This event of termination of employment occurred, or was reported, approximately three weeks after reporting on event no. 2, which addresses safety omissions within ECA.

1.17.4. Inspection supervision conducted by the Croatian Civil Aviation Agency at the company ECA

In August 2016, the Croatian Civil Aviation Agency conducted inspection supervision at ECA. The aforementioned inspection supervision included aircraft DHC-6, 9A-TOA, 9A-TOB, 9A-TOC and 9A-TOE, which ECA used in its commercial operations. The following was reviewed:

- Originals of aircraft technical logs for the period from 1 June 2016 until 9 August 2016;
- Originals of work orders and pertaining records on performed work on aircraft maintenance for the period from 1 June 2016 until 9 August 2016;
- Copies of records on postponed work on the aircraft;
- Continuing airworthiness records for the aircraft;
- Storage of spare parts;
- Aircraft maintenance tools and equipment;
- Aircrafts registrations 9A-TOA, 9A-TOB, 9A-TOC and 9A-TOE.



During the inspection supervision the following irregularities were established:

- Certificate of Release to Service, after performed maintenance works, were issued by unauthorized persons;
- In the spare parts store, there were parts found without appropriate or without any CRS form.
- Parts which do not have any CRS forms were installed in the aircraft;
- The maintenance organization did not record all information on the performed maintenance work, necessary for issuing aircraft CRS;
- Additional delay of already postponed maintenance works without an appropriate approval of the responsible person for flight operations;
- Certificates of Release to Service were not issued upon completion of each maintenance;
- Certificates of Release to Service were issued after the aircraft maintenance in cases where some works require the equipment or tools that the organization does not possess, nor it possesses proofs that it has otherwise ensured the necessary tools and equipment;
- No duplicate inspections for critical tasks and complex tasks were signed;
- A large number of repetitive errors on the aircraft. The same are closed with actions that do not resolve the cause of the error;
- Certificate of Release to Service was issued without determining whether the detected corrosion was within acceptable limits and whether the aircraft is airworthy;
- The status list of the rotating parts of the aircraft is not credible;
- The organization for managing continuous airworthiness does not perform an evaluation of aircraft errors for which it manages continuous airworthiness.

In their statements regarding the said events, the responsible manager and quality system manager stated that they had no knowledge of any irregularities.

During the year 2016, several additional inspection supervisions were conducted by the Croatian Civil Aviation Agency regarding ECA flight operations. Several irregularities were established regarding filling flight documents, calculating the weight of the baggage and balance of aircraft, flight crew scheduling and required crew rest, and evaluation of voluntary occurrence reports.

1.17.5. **Comments from interested parties on the draft Final Report**

After drafting of the Final Report, AIA provided the report for review and comments to all interested parties who somehow participated in the accident or are covered by this Final Report.

Upon receipt of the comments, AIA carefully considered them and accepted them to the extent it considered justified.

It is important to emphasize and to understand that AIA is not involved in establishing of any kind of guilt and liability, but through an investigation of an accident seeks to discover weak points in the system and series of events that led to the accident. Furthermore, by making recommendations AIA attempts to correct these weak points.

Therefore, certain items analysed in this report or even recommendations do not necessarily have to relate to direct causes and participants of the subject accident, but may relate to noticed system deficiencies and the ability to improve it.



In the view of the said, the analysis, conclusions and recommendations outlined in this report are not accusing elements and should not be interpreted as such. The purpose of this is to improve the system and safety, which is the common interest of AIA and all air traffic participants.

1.17.6. Enclosure - comments of ECA on the draft Final Report

At the request of the company 'European Coastal Airlines Ltd', and in accordance with the provisions of ICAO Annex 13, the comments of the said company to the draft of the Final Report are enclosed to this report.

As mentioned above, AIA accepts the comments and incorporates them in the Final Report to the extent it considered justified. Comments from the interested party should primarily refer to the facts presented in the Final Report and possibly to the analysis, if the interested party by acceptable arguments explains its views.

Comments based on certain principles that apply to courts, are often not acceptable for AIA. Tasks and mode of operation of AIA are different from the principles by which courts proceed. AIA does not deal with determining of guilt and liability pursuant to the law, or with transfer of guilt and liability from one natural person or legal entity to another. Such actions are resolved in court.

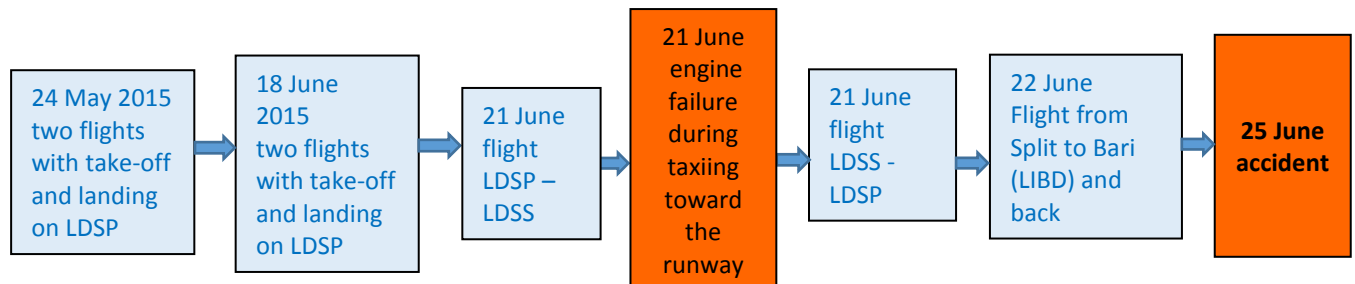
Invitation to commenting the draft of the Final Report was sent to ECA, i.e. the responsible and expert person of the said company. Drafts of the Final Reports are always classified documents and are intended solely for the legal entity or natural person to whom they are addressed.

The involvement of legal representatives such as law firm, for the purpose of commenting the draft of the Final Report, is not needed or appropriate for the following reasons:

- for reasons previously elaborated in details, results of AIA investigations are neither intended nor applicable for conducting court proceedings and hence the involvement of a law firm for the purpose of commenting the draft of the Final Report is pointless.
- the engaged lawyers are not experts in the field of aviation (techniques, operations, training, etc...) and as such they cannot generally provide comments which are necessary for completion of the Final Report. They can provide comments in accordance with their profession, which is not the purpose and aim of AIA's work, but can mostly be applicable only to court proceedings.
- considering that the draft of the Final Report is a classified document provided and accessible only to the legal entity or natural person to whom it is addressed, presenting such document to anyone else and even to a law firm is not in accordance with the applicable regulations.

2. ANALYSIS

2.1.1. The course of events in the last month before the accident



In the period of one month before the accident, a total of eight flights were performed on the subject aircraft. Five pilots participated in the aforementioned flights. All five pilots were ECA employees.

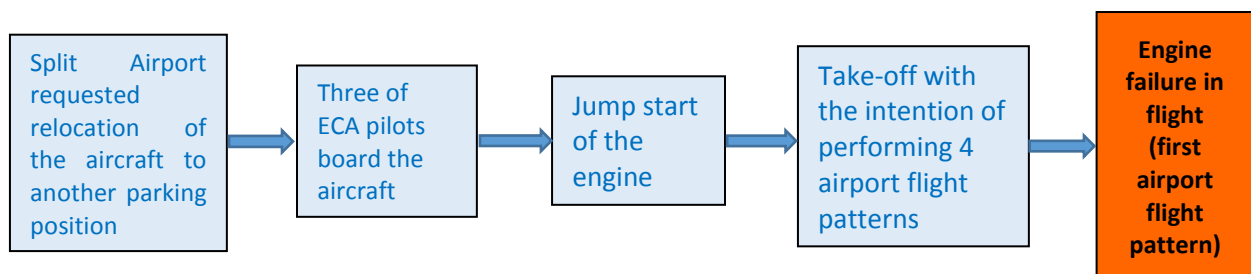
On 24 May 2015 and 18 June 2015 local flights in the Split Airport area were performed.

On 21 June 2015 a flight was performed from Split Airport to Airport of Sinj where the pilots and the aircraft stayed for about 4 hours and then returned to Split Airport. Before taking off from the Airport of Sinj, when taxiing to the runway, the aircraft engine suddenly stopped. The pilot immediately restarted the engine, and the aircraft took off. Upon landing at Split Airport, the pilot, according to his statement, verbally informed a superior on the engine failure. Also, the pilot stated that he did not know whether something or what has happened regarding his verbal report on the engine failure. One of the pilots on this flight was the person who later participated in the accident and was the only survivor of the accident.

On 22 June 2015 the subject aircraft flew to Bari in Italy and back. One of the pilots on this flight was the person who also participated and was killed in the subject accident.

On 25 June 2015 the subject accident occurred.

2.1.2. The course of events on the day of the accident





According to several persons' statements, the initiative to relocate the subject aircraft came from Split Airport. The same requested that, due to the upcoming weekend and the expected increase in traffic of the general aviation aircraft, the aircraft should be relocated from the general aviation apron to another parking position. The aforementioned relocation could have been done by taxiing of the aircraft on the airport surfaces, without taking off.

On several occasions, AIA has requested information from the Split Airport on who and from whom requested the said relocation of the aircraft, as well as the document of Split Airport in which such procedures would be defined. Split Airport failed to respond to these inquiries or deliver the requested information.

At the general aviation apron, four pilots, ECA employees met nearby the subject aircraft. They noticed that battery of the aircraft was empty and so made starting of the engine with an external battery and cables ('jump start').

After ignition, the aircraft remained for fifteen to twenty minutes in the parked position with the engine running in order to refill the battery.

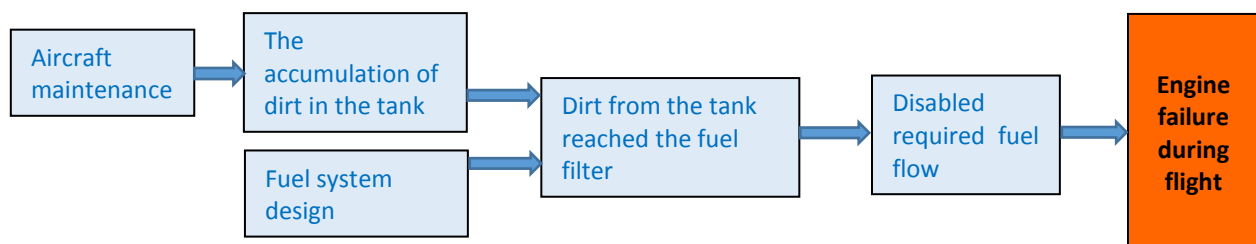
Three of those four pilots boarded the aircraft. They requested clearance from the control for take-off and for flying four airport circuit patterns within the airport area. For such flight the flight plan was not required and the controller cleared them for take-off.

According to the statements of ECA responsible persons, they were familiar with the request to relocate the aircraft, but not with the intention of the pilot to perform the flight.

The aircraft took-off, and then, in downwind of the first circuit pattern the engine stopped. After that, the aircraft was directed first towards the airport and then towards the sea. The engine failure was not reported to the control, and there was no other communication between the control and the subject aircraft after engine failure.

The engine failure occurred, according to the statement of the eyewitness who is also a pilot, approximately at the point where, according to the procedure, the electric fuel pump should be shut down. By shutting down the electric pump, the flow of the fuel to the engine was further reduced.

2.1.3. Engine failure during flight



Aircraft maintenance

During the preliminary inspection no seawater penetration was found in the main tank. Therefore, it was concluded that in this case the same did not cause or accelerate corrosion and that the components were in such or similar condition also at the time of the accident.

The tank of the subject aircraft was produced in March 1979, when the aircraft was produced. Since in the last 15 years this aircraft has mostly been in standstill, it is possible that the found dirt accumulated during that period.

By inspecting the technical documentation, it was established that during the last maintenance on 10 July 2014 the items relating to fuel tank maintenance were not signed as performed. Since then, the aircraft flew for 8 hours.

Tank dirt

The large amount of dirt which was found in the main fuel tank and the main fuel filter indicate that the flow of fuel through the filter, which is already limited in flow by its design, was further reduced.

It was concluded:

- that the above described state is outside the aviation safety standards,
- that the dirt was in the tank also at the time of the accident,
- that such state could have contributed to reducing fuel flow and contamination of the main fuel filter.

Fuel system design

The main fuel filter on the subject aircraft was of low flow, without the possibility of draining any accumulated water and without a built-in bypass which would enable the fuel to continue to power the engine in bypass if the main cable and the filter clogged. The Federal Aviation Administration (FAA) and the European Aviation Safety (EASA) warned about this problem by the special bulletin no CE-13-44. It is questionable whether the aircraft operator was aware of the existence of this warning and of possible dangers related to the information published in the bulletin.

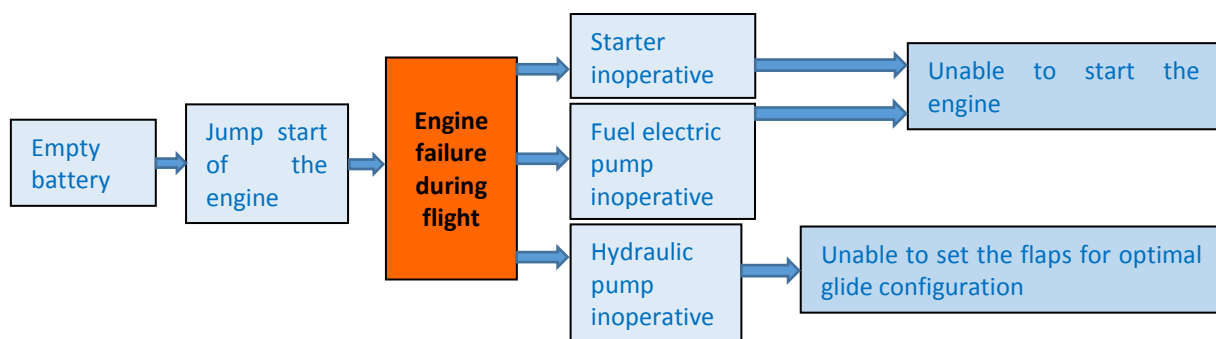
Fuel filter clogging and the engine shutdown

After carrying out all of the investigative actions described above, it can be concluded with great probability that the engine failure occurred due to insufficient flow of the fuel to the engine.

Also, it can be concluded with great probability that the place where the interruption of sufficient fuel flow occurred, was the fuel filter, which happened due to clogging.

Clogging of fuel filter was caused by the contamination by dirt that came into it from the fuel tank.

2.1.4. Electrical system



Battery voltage

By measuring the battery voltage after the crash of the aircraft, it was established that it provides only 6 V instead of a minimum of 12 V. After the crash of the aircraft, the battery was immersed into the sea. Therefore, it was not possible to determine whether the measured condition was the same before the accident, however taking into account all findings during the investigation, it is very likely that the battery voltage during the subject flight was insufficient.

After engine failure in flight

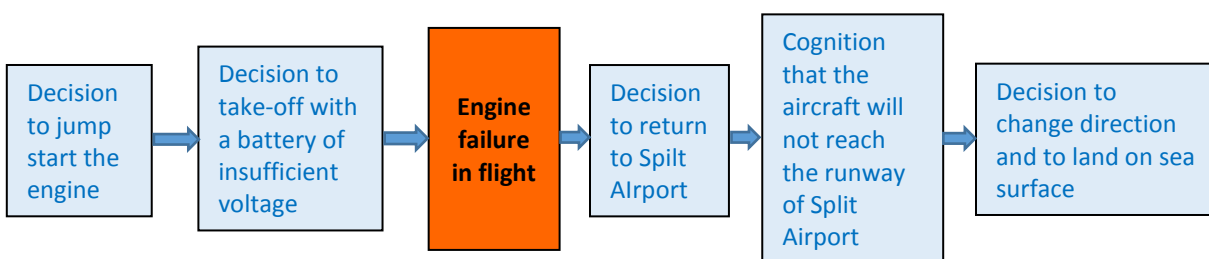
The engine failure procedure requires that the electric fuel pump is immediately switched on in order to allow supply of the engine with fuel during restarting attempt and to improve the fuel flow in the event of possible flow reduction due to dirt in the system.

When the engine is not running, there is no power supply from the alternator. In such situation, the electrical system can only be powered by the battery. However, if there is insufficient voltage in the battery, the power supply is insufficient and it is not possible to start the electric pump.

Also, it is not possible to start the engine starter. When the engine failure occurs in flight, the starter can be replaced by natural rotation of the propeller due to the speed of the aircraft (so called wind milling). Wind milling, however, due to too small rotation speed, on this type of aircraft is insufficient to enable the engine driven fuel pump to pump the fuel from the tank to the engine.

The engine failure procedure of the subject aircraft requires that the flaps are extended in order to improve gliding of the aircraft. A hydraulic pump driven by the electric engine is required to extend the flaps. If there is no voltage in the electrical system or battery, extending flaps is not possible. By preliminary inspection of the aircraft it was established that the flaps were retracted.

2.1.5. Human factor – decisions and cognitions



In addition to many other factors, the human factor in this accident also played a significant role. A series of decisions made by the pilot, alone or together with his colleagues on the aircraft, along with other factors, led to the accident.

Neither the decision to start the engine with cables, nor the decision to take off with a battery of insufficient voltage, are not in accordance with regulations and safety standards.



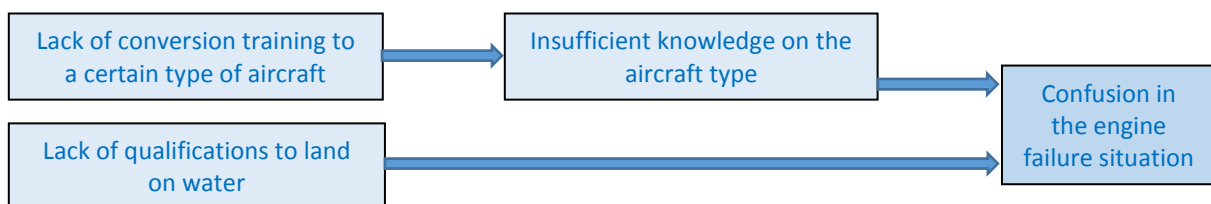
It was necessary to relocate the aircraft from a general aviation apron to another parking position at the same airport. This relocation did not require flying. Despite this, three persons who boarded the aircraft decided to take off and make a local flight within the airport area.

The decision to return to Split Airport after the engine failure was probably made because neither the pilot nor his colleague in the front seat had any experience of landing on the water, nor authority to do so. Furthermore, it is possible that such decision was made in order to avoid procedures after the airport emergency landing. Also, insufficient knowledge of the type of the aircraft probably contributed to such decision.

The pilot, alone or with his colleagues on the aircraft, obviously at one point became aware that he will not reach the runway of Split Airport and turned the aircraft in the opposite direction towards the sea.

The height was additionally lost in turns towards the Split Airport and then towards the sea.

2.1.6. Qualifications as factor



All three people who were on board the aircraft were professional pilots employed with ECA. None of the aforementioned three persons had conversion training for this type of aircraft.

Also, the only person, who was sitting in the back seat, had the qualifications and the experience of landing on the water surface. The pilot who operated the aircraft and the other person in the front seat did not have it.

Not being familiar with the type of the aircraft and its performances as well as the unpreparedness to land on the water, are very likely the main factors influencing the decision-making after the engine failure. If the pilot was familiar enough with the subject aircraft, it would be expected that at a critical moment he would not try to return the aircraft to the airport.

For pilots flying on a particular type of aircraft, the company should provide conversion training for a specific type of the aircraft. According to management of the company, the aircraft Lake LA-4-200 should have been used for providing logistical support to other aircraft used by the company for commercial flight operations. It is not clear how the company ECA intended to use the aircraft Lake LA-4-200 if the pilots employed with the same company did not undergo conversion training for that type of aircraft.



2.1.7. Operator of the aircraft 9A-DLA, the company 'European Coastal Airlines'

The aircraft operator is always a very important factor on which many issues depend, such as the aircraft maintenance and equipment, staff qualifications, quality of work, discipline and seriousness, etc. In order to get a complete and realistic picture on causes and factors which led to this accident, it is also necessary to pay attention to the airline company that was the operator of the aircraft 9A-DLA and the employer of persons killed and injured in the subject accident.

Below is the analysis of facts and information that were established in the investigation, which relate to the aircraft operator, the company 'Europski obalni avioprijevoznik', in English 'European Coastal Airlines', abbreviated ECA.

2.1.7.1. Occurrences that endanger the air traffic safety

Maintenance

During the investigation, there have been a number of findings that were pointing to certain flaws within the organization of the operator, the company ECA. In addition to the findings that arose directly from the investigation of the subject accident, events that were not directly related to this accident should definitely be taken into account. These events point to a manner of operation and relationships within the company ECA, which are certainly factors that played a significant role in creating the assumptions for the subject accident.

A large amount of dirt that was found in the fuel tank of the subject aircraft indicates a failure in maintenance. Due to the design of this aircraft, the fuel tank is difficult to reach and cleaning of the same is quite complicated. Approximately one year before the accident, maintenance was performed, within which the fuel tank maintenance item was not signed by an authorized person as performed. Since then, the aircraft flew for 8 hours. It is unlikely that the amount of found dirt was accumulated in one year, i.e. 8 flight hours. It can be assumed that the maintenance of this item has not been performed correctly or was not performed at all.

The ECA's CAMO organization did not react to the missing signature of the authorized person regarding the item relating to the maintenance of the fuel tank of the subject aircraft.

Furthermore, approximately one year after the subject accident, due to the corrosion, the breakage of the rudder left control cable on the passenger aircraft occurred. The fortunate circumstance was that this breakage of the rudder control cable occurred before taking off, while taxiing on the airport surface. If this breakage occurred during the flight, the mentioned passenger aircraft and the person in it would most likely experience a very serious accident. Effects of corrosion to the structure and parts of the aircraft should be detected and repaired during maintenance before the corrosion progresses to the extent where the functionality of the individual parts is compromised. Considering that ECA aircraft perform flight operations in conditions that are very aggressive in terms of corrosion (take-off from the sea surface, salt water), particular attention should be paid to the aircraft maintenance in such conditions. In principle, defect of one of the vital aircraft commands caused by a maintenance failure is something that should not happen, especially not to the operator engaged in commercial operations.

Also, it can be noted that the breakage of the rudder control cable occurred approximately one year after the crash of the aircraft 9A-DLA. One month after the crash of the aircraft 9A-DLA, AIA issued a



Preliminary Report, by which the company ECA was familiar with findings indicating poor maintenance (dirt in the tank). Following the events described above, it can be concluded that the quality of aircraft maintenance within the company ECA has not been improved even after the first findings of the investigation of the subject accident. This indicates the deep rootedness of a certain approach and mode of operation within a company.

Reports on events that endanger the air traffic safety

The first voluntary occurrence report of an anonymous reporter pointed out to a number of serious omissions within the company ECA. The findings of the inspection supervision which was carried out by the Croatian Civil Aviation Agency in August 2016 confirmed most of the allegations made by the anonymous reporter.

Beside the serious security breaches made over a longer period of time, it was established that the operator did not report them through the mandatory occurrence reporting system, which it is required to do by regulation. This finding also indicates the extent of the certain approach and mode of operation within the company.

Termination of employment contracts

Another voluntary occurrence report by an anonymous reporter pointed out to the procedure of the company ECA after finding out about submission of the voluntary occurrence report which reported the safety omissions within the company. According to the statement in the said report, four employees' employment contracts were terminated with explanation that they consumed alcohol.

In both voluntary occurrence reports, the reporter stated that he firstly pointed out the omissions to the operator and after the condition remained unchanged, the reporter submitted these reports through the voluntary occurrence reporting system.

Although within this investigation it is difficult to confirm or deny the ECA's argument about alcohol consumption of its employees, the fact is that the terminations of employment contracts were delivered shortly after the voluntary occurrence reports on omissions within the company, to four employees at the same time. It is questionable why the company failed to take such measures against employees that allegedly consumed alcohol earlier.

The just culture is one of the key factors for the development and improvement of air traffic safety. In Europe and in the world, large attention is paid to promoting and implementing the just culture. Its basic principle is to encourage reporting on errors and safety omissions, in order to resolve them before they turn into an accident. For this purpose, the just culture, among other things, promotes the 'do not kill messenger' principle, which means that reporters who report with the aim of improving safety should not be sanctioned, either by competent institutions or by employer.

2.1.7.2. Inspection supervision conducted by the Croatian Civil Aviation Agency

In the statement of responsible manager and quality system manager regarding irregularities within the company ECA during the inspection supervision in August 2016, they stated that they had no knowledge of any irregularities within the company.

The lack of knowledge of omissions and irregularities is not in line with the functions that those managing persons have in the company. Persons in these functions should be aware of the problems in the maintenance process, as well as all other omissions in the company, especially if these omissions



occur continuously. This fact indicates that the control and supervision system within the company ECA, was not functioning properly.

From the aforementioned irregularities, which were established by the Croatian Civil Aviation Agency in several inspections conducted in the company ECA during 2016, a low level of supervision of the flight operations quality by the responsible persons of the company could be noticed, as well as a low level of supervision in general.

Also, the findings of the said inspection supervisions confirmed the findings regarding the situation in the company ECA to which this Agency came during the subject investigation.

2.1.1.7.3. 'Company culture'

By the term 'company culture' we refer to the mode of operation and behaviour which prevails in a particular company. This is some sort of unwritten rule which determines what and how is something done in certain organization, what is acceptable, and what is not. Despite properly documented standards and procedures, such unwritten rules can become dominant and determine standards which become generally accepted within a company.

As mentioned earlier, three persons took-off with the subject aircraft without requesting permission from their superiors in the company. According to the statements of managing persons of the company after the accident, they were not even informed on the intention of flying, nor were they requested permission to do so. Also, they fully distance themselves from the actions of persons who took-off with the aircraft and consider that to be a grave violation of discipline, rules and procedures within the company.

Buildings of the company ECA are located in immediate vicinity of Split Airport. The intention of three persons on the aircraft was to perform four circuit patterns in the area of Split Airport, which was announced to the flight control. Therefore, they were planning to fly the whole time in the immediate vicinity of the airport, which is also close to the ECA headquarters. It is not likely that such flight can be performed in such a way that it is not noticed by some employee of the company ECA. It can be assumed that persons on the aircraft were not worried about the fact that they would most likely be noticed by the company's staff, which was what happened. One of the main eyewitnesses of the accident was the employee of the company ECA. The logical assumption that follows from the foregoing is that the persons on the aircraft did not even expect to be sanctioned by their superiors for the subject flight. In other words, it is possible that such conduct of persons on an aircraft is deemed as 'acceptable behaviour' that prevailed in the company.

In the period of one year before the accident, five pilots flew on the subject aircraft, all employees of ECA. All flights were recorded in the aircraft logbook. None of the aforementioned five pilots had conversion training for aircraft LA-4-200.

Considering that all of these flights were duly registered in the aircraft logbook and that the same was available to the responsible persons in the ECA, it can be concluded that those responsible persons were familiar with the flights of the aircraft LA-4-200.

Furthermore, in the view of the said, it can be concluded that the company ECA supported or at least tolerated flying on the subject aircraft without the necessary conversion training for that aircraft type.



On the other hand, if the responsible persons in ECA were not familiar with the said flights of the subject aircraft, this would mean a serious organizational flaw in terms of supervision within ECA, since all flights were registered by pilots, and take-offs and landings took place in the immediate vicinity of the company's headquarters.

Taking into account all of the said, it can be concluded that certain safety omissions within the company ECA occurred on a regular basis (failures in maintenance, lack of discipline, circumvention of prescribed actions and procedures ...). Furthermore, all of the foregoing points to the assumption that the described situation within the company ECA has become routine and was accepted by a certain number of employees, including the company's management. Such situation greatly contributed to the development of the previously described events that led to the subject accident.

3. CONCLUSION

3.1. FINDINGS

Weather conditions

- Favourable for flying, were not factor in this accident.

Split Airport

- Split Airport requested relocation of the aircraft;
- In the initial phase of the investigation, Split Airport provided substantial support to the safety investigation conducted by AIA;
- At a later stage of the investigation, Split Airport did not respond to multiple AIA inquiries regarding providing information for the subject safety investigation, related to specific procedures of Split Airport;
- Conclusion can be made that procedures for aircraft relocating on the Split Airport ground surfaces are not precisely defined in the Airport Operations Manual.

Flight preparation

- Relocation of the aircraft 9A-DLA could have been performed without taking off, by taxiing the aircraft on the airport surfaces;
- Three people, all professional pilots and ECA employees, boarded the aircraft 9A-DLA and decided to take-off;
- The flight was announced and approved by control;
- Responsible persons of the aircraft operator, the company ECA, were not notified on the take-off of the aircraft 9A-DLA.



Findings related to the flight

- During starting the engine of the aircraft 9A-DLA on the day of the accident, the battery of the aircraft was depleted;
- The aircraft engine was started by an external battery ('jump start');
- When starting the engine of the aircraft 9A-DLA by external battery a fourth person, also a professional pilot and employee of ECA, was present and assisted;
- Sitting schedule on the aircraft:
 - o the person who most likely operated the aircraft, was sitting in the front left seat,
 - o the only person who survived the accident, was sitting in the front right seat,
 - o the person who was a foreign citizen, was sitting in the back seat,
- The engine failure occurred in flight;
- The engine failure occurred approximately at the point where, after the take-off, the electric fuel pump regularly is turned off;
- Pilot's response after the engine failure was not optimal considering the circumstances and the position of the aircraft.

Persons on board the aircraft

- All three persons on board the aircraft were experienced pilots with valid CPL licences;
- All three persons on board the aircraft were employees of the company ECA;
- None of the three persons on board the aircraft underwent conversion training for the aircraft LA-4-200;
- Both persons in the front seats did not have the authorisations or experience of landing on the water, while only the person in the back seat had it.

Operator of the aircraft 9A-DLA, the company ECA

- Lack of discipline – in the company a high level of tolerance for failing to comply with prescribed actions and procedures could be noticed;
- Insufficient supervision - the management of the company was not familiar with the events within the company to the necessary extent;
- Company culture - certain procedures within a company that were not carried out in accordance with the prescribed procedures were considered acceptable;
- Training – the operator did not ensure conversion training for the aircraft from its fleet, type LA-4-200 to its pilots.

Maintenance of the aircraft LA-4-200 registration 9A-DLA

- The maintenance was performed by a maintenance company with headquarters in Slovenia;
- Continuous airworthiness management was performed by an authorized CAMO organization within ECA;
- The last maintenance was carried out on 10 July 2014, which was confirmed by the signature of the authorized person;



- As a part of the last maintenance, the items relating to fuel tank maintenance have not been signed as performed;
- After the last maintenance, the maintenance organization issued a certificate of release to service;
- The CAMO organization of the ECA did not react to the missing signature of the authorized person along the item relating to the maintenance of the fuel tank of the subject aircraft;
- After the accident a large amount of dirt was found in the fuel tank;
- It is unlikely that the amount of found dirt accumulated in the period from the last maintenance until the accident, which is approximately 11 months and 8 flight hours;
- It can be assumed that the last maintenance of the item relating to the fuel tank of the subject aircraft was not performed correctly or not performed at all.

Other

- ELT failed to activate during the crash of the aircraft;
- Several days before the accident, at the Sinj Airport, when taxiing towards the runway, the engine of the subject aircraft stopped.

3.2. CAUSE

Direct causes:

- Engine failure;
- Pilot's response to the resulting situation was not optimal.

Contributing factors

- Lack of pilots' skill to take-off and land on the water surface;
- Lack of conversion training for the type of the aircraft;
- Aircraft maintenance;
- Lack of discipline in the company;
- Insufficient supervision within the company;
- Company culture.

4. SAFETY RECOMMENDATIONS

Recommendations to the company ECA

Considering the findings from the subject investigation, AIA issues to the company ECA the following safety recommendations:



AIA04-SR-03/2018

The company ECA should, by conducting appropriate supervision of flight operations, ensure that flight operations are carried out in accordance with the prescribed actions, procedures and approved company manuals in order to raise the quality of said operations to a satisfactory level.

AIA04-SR-04/2018

The company ECA should, in case of non-flight operations (e.g. moving the aircraft by taxiing on manoeuvring surfaces and without take-off), elaborate and define in the Operations Manual the implementation of such actions. If possible, communication between the ordering party and the party who conducts the said actions should be accompanied by a written record, such as e-mail as a form of fast and simple written communication.

AIA04-SR-05/2018

The company ECA should, by conducting appropriate supervision over its CAMO organization, ensure that the quality of maintenance of the aircraft from the ECA fleet is raised to a satisfactory level.

AIA04-SR-06/2018

The company ECA should ensure that flight crew conducting flight operations on the company's aircraft carries out all required and prescribed flight crew training for aircraft to be flown for the needs of the company ECA.

AIA04-SR-07/2018

The company ECA should, respecting the obligation to report and the principles of just culture, support its employees' efforts to report on events that endanger air traffic safety.

Recommendations to Split Airport

According to the findings of the subject investigation, it follows that the process of relocating aircraft within the airport was not elaborated and documented in the Operations manuals of the Split Airport. Furthermore, it can be noted that the SMS system and the management of the Split Airport are not fully familiar with legal obligations to provide information to AIA, for the purpose of conducting safety investigations.

Therefore, although the aforementioned findings did not have a direct influence to the subject accident, AIA noticed possibilities for certain improvements and provides Split Airport with the following safety recommendations:

AIA04-SR-08/2018

Split Airport should introduce a system that will by written record support certain operations of aircraft in the airport, such as aircraft relocations or similar operations. For this purpose, it is possible to use e.g. e-mail as a fast and simple way of written communication. The said system should be elaborated and defined in the relevant Operations Manual of the Split Airport.



AIA04-SR-09/2018

Split Airport SMS system, as well as Split Airport management, should be familiar with the legal obligation to provide information for the purposes of safety investigation and ensure that such information is submitted at the request of the authority in charge and authorised to conduct safety investigations.

Recommendations to the Croatian Civil Aviation Agency

Considering the findings of the subject investigation, AIA issues the following safety recommendations to the Croatian Civil Aviation Agency:

AIN04-SR-10/2018

The intensity of supervision of operator performed by Croatian Civil Aviation Agency, should be based on risk factors assessment (Risk based approach), considering relevant factors such as the introduction of a new type of aircraft into operations, the conditions in which the operator operates, the type of operations and similar.

AIA04-SR-11/2018

The Croatian Civil Aviation Agency should support the amendments of the Operational manual which Split Airport should implement in accordance with the recommendation **AIN04-SR-08/2018**.

Investigator in charge

Danko Petrin



5. ENCLOSURE

5.1. COMMENTS OF ECA TO THE DRAFT OF THE FINAL REPORT

At the request of the company 'European Coastal Airlines Ltd', and in accordance with the provisions of ICAO Annex 13, the comments of the said company to the draft of the Final Reports are enclosed to this report.

According to Regulation (EU) No. 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation, ICAO Annex 13, Act on Establishment of the Air, Maritime and Railway Traffic Accident Investigation Agency (Official Gazette no 54/13), provisions of the Air Traffic Act (Official Gazette No. 69/09, 84/11, 54/13, 127/13 and 92/14), and GDPR, all personal names mentioned by ECA in its comments have not been published in this enclosure.

**STATEMENT
of the operator of aircraft 9A-DLA, Lake LA-4-200, company European Coastal Airlines Ltd. (ECA)
on the Draft of Final Report on the Accident of Aircraft Lake LA-4-200, 9A-DLA, at Resnik near Split on 25th June 2015**

The Draft of Final Report on the Accident of the Lake Aircraft, LA-4-200, reg. 9A-DLA, at Resnik on 25th. June 2015, was received by post mail on 30 April 2018 from the Agency for Accidents Investigation in Air, Maritime and Railway Transport (AIN), and the operator, ECA is hereby giving the following statement. All statements were made within the required 60 days from the date of receipt.

Pursuant to Article 16, paragraph 4 of the REGULATION (EU) No. 996/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 October 2010 on investigations and prevention of accidents and incidents in civil aviation and the exclusion of Directive 94/56 / EC (Regulation 996/2010), this statement of the operator of aircraft, company ECA, on the Draft of Final Report on the Accident of Aircraft Lake LA-4-200, 9A-DLA, at Resnik on 25th June 2015, is submitted to the AIN for the purpose of reviewing all facts and documents as well as the necessary amendments, corrections and modifications to the Draft Final Report, or otherwise, as an attachment to the Final Report - an operator's statement, all for the purpose of true and correct observation and determination of the real causes that led to the 9A-DLA aircraft accident.

I. Statement about the investigation proceedings performed by the AIN

In accordance with the provisions of the Ordinance on Reporting and Investigating Events Concerning Aircraft Safety, Accidents and Serious Incidents of Aircraft (OG 107/15 and 92/16 - Ordinance), ECA, as an interested person (9A-DLA aircraft operator), has submitted to the AIN, in a two-year period after the accident, several statements and facts relevant to the investigation of the aircraft accident in question. Statements and comments were submitted on six separate occasions, by letters, dated from 10.7.2015. to 13.8.2017., in the content and with documentation as follows:

1. ECA statement on accident from 10.7.2015. by the Director of Flight Operations, in which the aircraft operator confirms:
 - (1) that flights on the "Lake" 9A-DLA were not planned on 25.6.2015;
 - (2) that both pilots were employed only 1 months before, 25.5.2015., and were waiting for type rating training on the Twin Otter aircraft (type rating training was outsourced to Panonia ATO);
 - (3) that both pilots were not planned for any training on "Lake";
2. ECA statement from 13.7.2015. by the Safety Manager, by which it is confirmed that:
 - (1) documentation about flight preparation and planning, including a *flight plan*, does not exist because the flight was not planned;
 - (2) there were no information, neither written nor oral, that there will be flights with Lake aircraft on that day;
 - (3) requested "*training plan for both pilots for that day*" does not exist because ECA is not a Approved Training Organization (ATO) and therefore does not provide any training of pilots;
3. ECA statement to the AIN's Temporary Report from 27.7.2015 dated 12.8.2015., by the Accountable Manager/CEO of the operator, stating that:
 - i) the flight was not a training flight, as wrongly stated in the Report;
 - ii) it is not stated in the Report that the flight was "not approved" by the operator;
 - iii) quote „*water found in the fuel filter is probably sea water, because the engine and fuel system was submerged in the sea*“, as stated in the Report, is impossible because:
 - fuel supply system is closed system under pressure.
 - electrical fuel pump was inoperative (empty battery) and therefore no fuel could be supplied (pumped) to the engine fuel filter after the accident;
 - iv) informative Bulletin of FAA was not correctly stated and was misleading, and used as alleged explanation for engine failure.
4. ECA explanations to the AIN from 15.12.2016. by CEO of the operator, stating that:
 - i. flight order for all flights, including the "Lake" were given exclusively by the Flight Operations Director or his deputy in his absence;
 - ii. the "Lake" aircraft was not used in schedule commercial operations and therefore was not in the flights planning system of the operator for scheduled flights;
 - iii. the engine of the "Lake" 9A-DLA was examined in Canada by EASA/FAA certificated maintenance organization, and sweet water (NOT salt water) was found in the fuel pump and fuel system (report with pictures was enclosed);

- iv. the aircraft battery was empty and the pilots started the engine with external (car) battery (*illegal jump start*), witness by a senior ECA Captain on Twin Otter aircraft;
 - v. trim stability and adjustment for level flight with the "Lake" aircraft (*trim*) is demanding with an inoperative engine and without electric power to operate the hydraulic pump and trim system;
 - vi. the flight was not a training flight and the pilots took the aircraft without approval for that flight.
5. ECA to AIN in mail from 16.6.2017. and a letter from 17.7.2017. by CEO of the operator, stating that:
- i. a List of violations of regulations and procedures by the pilots was submitted in an attachment;
 - ii. AIN was notified that the Aircraft Technical Logbook (ATL) for day 18.5.2015. was falsified by Pilot 2;
 - iii. the flight was flown below the minimal safe altitude in Split airport traffic pattern of 1.500 ft AGL (flight was at 700-800 ft);
 - iv. evidence photos were submitted to AIN about violation of flight rules by Pilot 2 during another private flight over Split;
 - v. complete Report about engine examination by EASA/FAA approved MRO Victoria Aircraft Maintenance was submitted in the attachment;
6. CEO of ECA submitted additional explanations on facts were done by mail from 13.8.2017. about entries of data to ATL/ALB by Pilot 2.

These ECA's statements with explanatory notes and documentation, which indicates important and relevant facts to clarify the actual events and actions and which represent at least a firm clue for further investigative actions and their analysis, are given in order to determine the actual and main causes of the accident plane 9A-DLA.

However, referred statements, explanations and documentation in the most important parts, the AIN did not consider them as relevant for any further investigation of the actual causes of the accident concerned.

The contents and the significance were not at all, or were incorrectly quoted and wrongly interpreted. On some of the most important facts the necessary investigative actions and analysis were not conducted, nor were they stated in the Draft Final Report.

This is apparent from the following comparison of statements and facts that ECA has provided to AIN.

Comparing the later proceedings, statements and report made by AIN in the Draft Final Report, are as follows:

Statements and facts submitted by ECA to AIN	Statements and explanations done by AIN in the Report
Flight was not planned nor approved by the aircraft operator, ECA. Pilots took the aircraft without permission.	ECA responsible persons were not informed about the flight
Aircraft Technical Logbook (ATL) and Aircraft Logbook (ALB) contains falsified entries done by pilot 2	AIN did not comment nor investigate these facts.
Evidence that mandatory preflight check was not done by pilots, because sweet water was found in fuel system components (fuel tank was not drained).	AIN only stated that the preflight check was not signed off in the aircraft books and do not investigate these indications.
<p>Facts in the report by the Canadian EASA/FAA Certified Maintenance Organization from 30.5.2017. on the inspection of the engine fuel system components:</p> <ul style="list-style-type: none"> — no signs of physical damage neither the components of the fuel system nor the fuel supplying pipelines; — large droplets of fresh water, NOT sea water, were found in fuel system components; — seawater was NOT found in any component; — sweet water found in the components could only come from fuel tank. 	<p>AIN totally ignore the Report and did not mention it in their Report. AIN did not initiate investigation to prove those facts and indications of possible cause of accident. AIN has inspected the fuel filter and concluded that “water found is probably sea water which entered through the fuel injector because it was submerged in the sea” and miss to analyze which water is in question.</p>
<p><i>Aircraft Operational Manual</i> of the Lake aircraft and check list are binding for preflight check and draining of water from fuel tanks and warns that water in the fuel system may result in difficulties in engine operation. FAA Informative Bulletin SAIB recommendation for fuel filter for Lake LA-4-200: “Pilot must follow standard procedure for preflight check according with aircraft operation manual, which includes also draining of water from fuel tanks”. ECA Operating Manual with compulsory procedure of preflight check.</p>	<p>AIN did not investigate suspicion about not preformed preflight check as a firm indication about possible misconduct in compulsory draining of water from fuel tanks and which may result in engine operation problems. AIN in its Report only states importance of draining of water from fuel tanks as it is stated in aircraft flight manual and FAA Informative Bulletin SAIB.</p>
<p>Documents ATL and ALB logbooks of the aircraft were not in possession of pilots before the flight. Technical and airworthiness status of the aircraft in preparation for a preflight check was therefore not determined and therefore the preflight check was not completed. <i>Note. It is by law mandatory to have all documents on board the aircraft.</i></p>	<p>AIN only states that “accompanied documentation of the aircraft was not in the aircraft during flight preparation and during the flight.”</p>
<p>Aircraft trim stability and adjustment for level flight with the Lake aircraft (<i>trim</i>) is demanding with an inoperative engine and without the electric power for the hydraulic pump, which operates the trim system.</p>	<p>AIN did not investigate this aggravating factor in aircraft flying, neither is it mentioned in the Report. AIN wrongly states in the report, that „the engine failure occurred somewhere at the point in which, after take-off, the electrical fuel pump is shut down in accordance with the procedure.” This statement of AIN is completely wrong. The aircraft was in airport zone (traffic pattern) and the Lake’s Flight Manual explicitly requires that in “the procedure of approach and landing electrical fuel pump must be turn on”.</p>

Aircraft emergency and safety systems, such as stall warning did not operate due to the manipulation of the electrical system and illegal jump-start done by the pilots.	AIN did not investigate this factor, or even mention it in the report.
Flight was flown below the minimal safe altitude in Split airport zone (traffic pattern) of 1.500 ft AGL (flight was at 700-800 ft) Pilots did not maintained minimum safety flight altitude, which will enable them sufficient time and altitude to perform required maneuver procedures for an engine out landing.	AIN did not investigate this contributing factor of flying of aircraft lower then the minimum required safe altitude, and did not mention this in the Report. AIN only noted in the Report that the fight was at an altitude of approx. 700-800 ft.

Regulations on accident investigation require procedures to be performed by AIN for the purpose of improving aviation safety and preventing accidents and serious aircraft incidents, **including the gathering and analysis of information, making conclusions, including the determination of causes** and, if possible, the creation of safety recommendations.

From the above stated facts and proceedings, it is apparent that AIN did not entirely and systematically collect and analyze all data and facts, and in particular not those provided by the operator of the aircraft, ECA, and this in a way as regulation requires - systematically and thoroughly conducted (Article 106, paragraph (4) of the Air Traffic Act (OG 69/09, 84/11, 54/13, 127/13, 92/14)).

II. Comments on statements and conclusions of AIN stated in the Draft of Final Report

Statements and conclusions by the AIN in the Draft Report		Comments and explanations of ECA and real facts
Report's Chapter 3. CONCLUSIONS		
3.1 FINDINGS		
Flight preparation	Relocation and moving of the aircraft could have been done without taking off, by moving the aircraft at aerodrome surfaces.	Mislead statement by the AIN, trying to justify the need to fly the aircraft for its relocation to the ECA parking area. The aircraft was supposed to be towed. Moving the aircraft from one location to another location on the airport is always done by tow or taxiing, and never by flying.
	Three persons, all professional pilots of ECA, entered in aircraft and decide to fly.	Mislead statement which hide actual facts that pilots did not have qualifications to operate that type of aircraft, and did not have permission of the aircraft operator, did not have documents of the aircraft, did not performed mandatory preflight check and went flying with an unworthy aircraft (flat battery and in gross violation the aircraft MEL). By this, pilots violated regulations EASA CAT.GEN.AH 125 (1) i AH 180 and Regulation EC 216/2008 (1.a; 1.b.;2.a.3 (i) (ii), 3.a.8.;4.a.;6.a.(i) i (ii); 6.b.; 6.d.
	Flight was announced and approved by Air Traffic Control (ATC).	Irrelevant information in which the AIN is trying to mislead that the flight was legally dispatched in accordance with ATC regulations. ATC is not a responsible body for approving use of aircraft from the operator, and will grant take off permission for notified flights, even for stolen aircraft (as this is) subject to fulfilment of ATC conditions (flight plan, or flight notification of flight is airport traffic pattern).
	Responsible persons of the operator, ECA were not informed about the flight.	Misleading maliciously statement, by which the impression is made, that the aircraft was simply utilized by the pilots, and they "ONLY" missed to inform the operator about their flight. Factually, it must be stated that pilots did not have approval to utilize the aircraft, nor any kind off flight permission from ECA. Pilots can not just take the aircraft for fun flights, they deem necessary or fell like "want to do flights". Procedure of approving and issuing flight permissions have been implemented by the operator towards all pilots who were authorized and trained to fly the Lake aircraft.
Findings in relation to flight	During engine start on the day of accident, aircraft battery was empty.	By this, the AIN actually confirms that the aircraft was not in an airworthy condition, and the 3 pilots still decided to fly the unworthy aircraft, this against all regulations and the aircraft Minimum Equipment List (MEL).

<p>Aircraft Operator, company ECA</p>		<p>In the AIN report it is NOT stated, that the pilots knowingly went flying with an unworthy aircraft, which is the main cause of accident.</p>
	<p>Aircraft engine was started with external car battery.</p>	<p>AIN knowingly miss to state the fact that it is a severe illegal act in aviation and violation of aircraft maintenance procedures, in violation of the EU Regulation EC 2042/2003, M.A.201 8d); M.A. 201 (a)+(b); M.A.403 (a)+(b). Such illegal manipulations by the pilots are an unlawful act of unqualified and uncertified aircraft maintenance, which the AIN totally missed to state in their report, even though these manipulations are the root cause of the accident and can be classified as the main cause. Operating the aircraft after the uncertified technical manipulations on the main aircraft systems must be seen as gross negligent by the pilots.</p>
	<p>Reaction of pilots after engine failure was not optimal regarding circumstances and position of aircraft.</p>	<p>Misleading and highly concerning statement by which AIN knowingly misses to state the fact, that the pilots did not implement one single of the regulated emergency flight procedures nor any of the emergency procedures set by the aircraft manufacturer. AIN knowingly did not state that pilots intentionally took an unworthy aircraft and consciously illegally performed act of unqualified flying and uncertified maintenance of aircraft and that the flight was flown below the minimum flight altitude and without all required aircraft documents. The AIN intentionally conceals these facts, although they are the main cause of the accident. In addition, the decision-making by the pilots to turn towards the airport was not just "not optimal" decision-making, this was a serious pilot error and significant wrong decision-making.</p>
	<p>In the company, it is noted a high degree of tolerance to non-compliance with prescribed procedures and standards. The management of the company allowed certain omissions.</p>	<p>Incorrect malicious statement based solely on false and subjective assumptions of the AIN. No evidence and findings from which such an allegation arise do exist. These subjective and arbitrary AIN allegations, without any evidence grossly blaming ECA as an operator, are entirely rejected. On the contrary, the ECA had several inspections in Flight Operations without any serious finding, namely:</p> <ul style="list-style-type: none"> • February 2016 inspection without findings; • April 2016 inspection supervises the Operational Center and Training, without any serious findings; • July 2016 inspection audited Flight Operations, only one finding for corrective measure. <p>Documentation on these inspections is available where there is no evidence of any "non-compliance". Furthermore, these allegations are in gross contradiction to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
	<p>Inadequate supervision - the management of the company was not sufficiently familiar with the events within the company</p>	<p>Incorrect malicious statement based solely on false and subjective assumptions. Not one of the aircraft of the operator was operated without clear permission and order of Accountable Manager and/or the Director Flight Operations. The daily schedule of flights, with all details, was determined by the Operation Control Center (OCC), the management staff defined the standards and procedures for implementation and monitored detailed the flight execution. Documentation as evidence is available Even the EASA FTL (Flight Crew Time Limitations) requires that operator monitor each flight and duty time</p>

		<p>of the pilot. No facts and finding for such statement do exists. On the contrary, the ECA had several inspections in Flight Operations without any serious finding, namely:</p> <ul style="list-style-type: none"> • February 2016 inspection without findings; • April 2016 inspection supervises the Operational Center and Training, without any serious findings; • July 2016 inspection audited Flight Operations, only one finding for corrective measure. <p>Documentation on these inspections is available where there is no evidence of any "inadequate supervision". These inspections by the CCAA of flight operations confirm orderly operations without findings or any serious problems. Pilot (Person 2) who flown Lake aircraft, confirmed by testimony at Court in Pula, that always for each flight he had received written or oral permission and flight orders. These subjective and arbitrary allegation by the AIN without any evidence, which are grossly blaming ECA as the operator are entirely rejected. Furthermore, these allegations are is gross contradiction to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
	<p>Company culture - certain procedures within the company that were not carried out in accordance with prescribed procedures, were considered acceptable.</p>	<p>Inaccurate and misleading statement based solely on false and subjective assumptions. Prescribed operator's procedures were approved by the CCAA and their implementation was under the inspection of the CCAA without any findings about non-compliance. On the contrary, the ECA had several inspections in Flight Operations without any serious finding, namely:</p> <ul style="list-style-type: none"> • February 2016 inspection without findings; • April 2016 inspection supervises the Operational Center and Training, without any serious findings; • July 2016 inspection audited Flight Operations, only one finding for corrective measure. <p>Documentation on these inspections is available where there is no evidence of any citing tha any company "procedures" were not carried out according to the company approved operating manuals. These inspections by the CCAA of flight operations confirm orderly operations without findings or any serious problems. These subjective and arbitrary allegation by the AIN without any evidence, which are grossly blaming ECA as the operator are entirely rejected. Furthermore, these allegations are is gross contradiction to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
	<p>Training – the operator did not provide type training for pilots that were flying the LA-4-200 aircraft, an aircraft in its fleet.</p>	<p>Incorrect quote and untrue misleading statement by AIN. The operator has not legal obligation to provide pilots training an all aircraft it operates. Pilots always operate a specific aircraft type, and receive the qualification and training for this aircraft type. All pilots of the operator who were flying the Lake aircraft, as well as for any other aircraft in operator's fleet, were trained to fly according to the regulations and requirements of the operator, or had previous experience.</p>

Aircraft Maintenance		<p>The Director of Flight Operations kept close control of all training, and was inspected and audited frequently by the CCAA without any findings.</p> <p>The Pilots who caused the accident in question were unauthorized to take the aircraft and such deliberate irresponsible behavior cannot be regulated by any company procedures. This is called theft, even if these pilots were employees of ECA.</p> <p>This inaccurate and accusing AIN's quote is entirely rejected.</p>
	As part of the last aircraft maintenance, items relating to fuel tank maintenance have not been signed as done.	<p>Complete maintenance, including cleaning of fuel tanks, has been carried out and signed or marked as having been performed by an authorized maintenance organization and authorized persons. The CAMO organization of ECA has confirmed this. Clear evidence from the maintenance organization which performed the maintenance is available to prove that all maintenance was performed.</p> <p>Based on this documentation, the CCAA who, prior to issuing of airworthiness certificate, had already issued the Airworthiness Review Certificate (ARC) on the 18.8.2014, confirming that it has checked the 9A-DLA aircraft maintenance documentation and that all the maintenance has been carried out correctly and completely.</p> <p>There is no evidence for such inaccurate and accusing AIN's statements, which are rejected entirely.</p>
	After the last maintenance, the maintenance organization issued a certificate of release to service.	
	CAMO organization of the ECA operator did not react to a lack of signature of the authorized person regarding the item relating to the maintenance of fuel tanks of the aircraft concerned.	<p>In the opinion of the ECA technical service manager, with over 30-year experience in aircraft maintenance, the dirt condition in the fuel tank was within the normal limits.</p> <p>Some residual deposits in the fuel tank is very common.</p> <p>The mandatory preflight procedure to drain fuel before every flight from fuel tanks to check and clear any possible water in the fuel tank also releases any amount of dirt which will be deposited on the lowest part of the fuel tank (sump).</p> <p>Fuel tanks are specially designed that any contamination settles in a lower part of the tank where it can be easily removed. Pilots 1 and 2 did not drain any fuel to check for water in the fuel tanks.</p> <p>If the amount of dirt was particularly large and above the normal amount, fuel and water could not be discharged from the reservoir because the drain would clog.</p> <p>It must be noted, that 2 days before pilot performed a complete fuel tank drain and did not witness any contamination in the tank.</p> <p>Pilots of ECA which were trained and qualified to operate the "Lake" 9A-DLA, followed the implemented mandatory pre-flight checks, which includes drainage of water from fuel tanks and had to enter this preflight check with a "sign off" in Aircraft Log Book (ALB), as evidenced by the Pilot ("PFC Completed A/C OK").</p> <p>This includes that the Pilots did not have a fuel drain clog, in which case they would have to call maintenance service. Both pilots did not enter the pre-flight check review on "their flights", June 18th. and June 21st.</p> <p>Consequently, this AIN statement about "impurities" in the fuel tank intentionally incorrectly interprets and exaggerates facts that have not been proven by any evidence, with the intention of reducing the liability of pilots 1 and 2 for their omissions and transfer responsibility to the aircraft operator.</p> <p>This inaccurate and accusing AIN quote is entirely rejected.</p> <p>These allegations are in gross contradiction to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
	Large amount of impurities was found in the fuel tank after the accident.	
	It is unlikely that the amount of impurities found could be deposited in the period from the last maintenance to the accident, which is the period of 11 months and 8 flight hours.	
	It can be assumed that the last maintenance of items relating to the fuel tank has not been performed correctly or has not been done at all.	

Other	ELT did not activate when the plane crashed.	<p>This is without any relevance to the accident.</p> <p>This quote merely states the exact fact, but AIN did not state that because of unauthorized and counterproductive technical manipulations on the electrical system of the aircraft by the unqualified and unauthorized pilots, the auxiliary (standby) system and emergency system of the aircraft were not functional.</p> <p>Besides, that the Emergency Locator Transmitter (ELT) did not function is totally irrelevant to the cause of the accident. The ELT is merely there to send a signal from a crashed aircraft when the aircraft goes down in unpopulated areas.</p> <p>The AIN is once again trying to subliminally place blame on ECA by bringing up issues out of any relevance for the accident.</p> <p>This is a gross contradiction to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
	A few days before the accident, at Sinj Airport, during taxing towards the runway, the aircraft engine stopped.	<p>This allegation has no substantial evidence, neither was this event known to ECA as an operator. AIN does not present any facts that confirm this event, and the pilot did not record it in the aircraft logbooks.</p> <p>It is not unusual for an aircraft engine at low throttle and low RPM setting to stop if the pilot keeps the fuel mixture full rich, and then the fuel is not fully burned. This is called "spark plug fouling" (led build-up on the spark plug).</p> <p>Experienced pilots do not keep the engine running below 1,000 RPM and occasionally increase power to burn of any deposits that build up from the led in the aircraft fuel.</p> <p>That the engine could be immediately restarted, and continued to operate, and takeoff without any problems is a clear indication that there was no problem with the engine.</p> <p>AIN should be aware of this phenomena. The engine manufacturer, Lycoming even issued a Service Letter L192B explains this phenomenon.</p> <p>AIN does not mention that 2 days before the accident, the aircraft performed a 4 hours flying without any problems.</p> <p>This statement represents the speculation of AIN and completely rejected.</p>
3.2. CAUSE		
Immediate factors	Engine failure	<p>AIN is knowingly missed to state and to determine that the total failure of the electrical system of the aircraft (the generator does not supply the electrical current after engine failure and the battery is empty) is the main cause of the accident:</p> <ul style="list-style-type: none"> • AIN does not state that the aircraft trim system did not work because of the lack of electrical power, rendering the hydraulic pump trim inoperative; • AIN does not state that the airplane flight was uncontrollable due to the lack of electrical power and to trim the aircraft pitch axis to be in the balance of aircraft; • AIN does not state that the Stall Warning System was not working because of a lack of electrical power; • AIN does not indicate that a restart of the engine after it stopped was not possible due to the lack

		<p>of electrical power. No engine restart available because of a lack of battery power;</p> <ul style="list-style-type: none"> • AIN does not claim that pilots were deliberately manipulated the technical system of the aircraft with the ultimate negligence, and therefore the auxiliary systems and emergency systems were not operational; • AIN does not claim that pilots started a flight with unairworthy aircraft (MEL) but considered them as "experienced pilots". <p>Engine failure, even with single-engine airplanes, is not a fatal event. Even Pilots starting from a PPL license are trained for landing on any available surface in such situations.</p> <p>AIN does not mention the fact that just before the engine failure the aircraft just performed to take-off with full engine power, where the engine consumes 60% more fuel than in level cruise flight. This is clearly indicating that the engine failure is not caused by a decrease in fuel flow but because of apparent contaminated fuel, which AIN is not mentioning nor exploring.</p> <p>AIN does not state that the cause of the accident stems from all of the above facts and that the pilots placed themselves gross negligently into the situation with an engine failure and that they were unable to restart the engine due to the flat battery, unable to control the flight because of the impossibility of trim the aircraft and not to use its emergency aids and landing on the water because they are not trained on that type of seaplane.</p> <p>AIN knowingly miss to state that the total failure of the aircraft's electrical system with unskilled and untrained pilots is the main cause of the accident, which is clear to every qualified person and pilot.</p> <p>This allegation of the immediate cause of the accident by AIN is inaccurate, arbitrary and misleading, and is entirely rejected.</p> <p>The complete failure of the aircraft's electrical system is undoubtedly the immediate cause of the accident. This situation was caused solely by the pilots, which operated the aircraft intentionally with an empty battery.</p>
	<p>The pilot response in given situation was not optimal.</p>	<p>AIN's allegation is a misleading claim and biased with intention to mitigate irrational and irresponsible behavior of pilots that caused the accident.</p> <p>AIN miss to note that pilots <u>did not applied emergency procedures</u> to keep a controlled flight path as required by the flight manual and airplane emergency equipment.</p> <p>AIN miss to note that the <u>lack of pilots training</u> for this type of aircraft was the reason correct emergency response was not implemented.</p> <p>AIN miss to point out <u>that engine failure is not the main cause of the accident</u> since pilots had a perfect landing surface (<u>sea below</u>) below them for landing.</p> <p>AIN does not finds that pilots <u>flew below the minimum safety altitude</u> of the flight, which did not allow them sufficient time and height to safely handle the emergency situation.</p> <p>AIN consciously eases and misses to state that the pilot's decisions making on the flight were extremely unprofessional and wrong, as their decision to turn towards the airport for an emergency landing.</p> <p>The assessment of the immediate cause of the accident stated by AIN is inaccurate, arbitrary and misleading, and is entirely rejected.</p> <p>Extreme unprofessional and irresponsible management by the pilots before and during the flight is another direct cause of the accident.</p>

Contributing factors	Lack of pilots' training to take off and land on the water surface.	Lack of training of pilots who fly the aircraft and end in a fatal accident is not a "contributing factor" but the main cause of an accident. Every aircraft accident investigation authority would classify the UNTRAINED, UNQUALIFIED PILOT as the main cause of the accident. Knowingly flying, an aircraft without prescribed training is an extremely irresponsible pilot behavior, and if this causes a death and damage, this act is a clear criminal offense of endangering traffic and life. AIN consciously and continuously seeking to reduce the pilots' responsibility by classifying their lack of knowledge as a "contributing factor" is unheard of in aircraft accidents investigations. As this is a criminal offence and extreme violation of EASA regulations and national regulations this can never be only classified as "contributing factor".
	Lack of training for aircraft type.	
	Aircraft maintenance	See 1.17.1. There is no evidence for such claims by AIN and is entirely rejected.
	Lack of discipline in the company	Untrue and arbitrary AIN's findings based on exclusively false and subjective assumptions. Facts and findings from which such an allegation arises do not exist. As highlighted in point 3.1. above, these subjective and arbitrary AIN's allegations are without any evidence and it is harsh, unargued and irresponsible blaming of the operator as an influential factor in the accident. On the contrary, there is evidence that the ECA operator was continually under the inspection of the CCAA and in the part of Flight Operations Operator (which includes compliance with regulations and procedures, discipline and safety culture of the operator), which inspections confirms no findings in orderly surveillance, discipline and safety culture of the operator. ECA had several inspections in Flight Operations without any serious finding, namely: <ul style="list-style-type: none"> • February 2016 inspection without findings; • April 2016 inspection supervises the Operational Center and Training, without any serious findings; • July 2016 inspection audited Flight Operations, only one finding for corrective measure. Documentation on these inspections is available where there is no evidence of any citing that any company "cultural issues" are evident within the company. These subjective and arbitrary AIN allegations without any evidence of grossly blaming the operator are entirely rejected.
	Lack of supervision within the company	
Company culture		
Chapter 1 – FACTS AND INFORMATION		
1.5. page 11	Pilot 1 was sitting on the left seat and was supposed to have operated the aircraft at the time of the accident. Pilot 2 set on the right seat. Although it can be assumed that the aircraft was operated by a person on the front left seat (pilot 1), it can not be claimed with certainty. Although the airplane was operated by one person, calling them all three pilots,	The facts of the case clearly indicate that pilot 2 was intending to "give instruction" to pilots 1 and 3 in aircraft handling and landing, and therefore occupied the right seat. The instructor always sits in the right seat and is pilot in command, and the pilot on the left seat receives instructions and manages the aircraft, but is not the pilot in command of the aircraft. Person 1 was a witness to the events before the flight of 9A-DLA aircraft and issued a notarized statement to the Court that " <i>pilots 2 stated clearly that pilot 1 and 3 should perform 2 traffic patterns at the airport</i> ". In

	<p>this report wants to emphasize their equality in terms of competences.</p>	<p>addition, with only a few minutes of flight time on the aircraft pilot 1 could not have been the pilot in command. This information was well known to AIN after an accident from person 1. It is therefore definitely clear that pilot 2 was sitting as a "self nominated instructor" on the right seat to "provide instructions" to pilots 1 and 3, and that he was the pilot in command of the aircraft on that flight at the time of the 9A-DLA accident. There is always only 1 pilot in command. The pilot in command of the aircraft is by law and EASA regulation the solely responsible for the aircraft flight. AIN has failed to establish these facts, which has prevented a valid analysis of the event and the determination of the clear causes of the accident and which has also prevented any analysis and determination of the human factor in the fatal accident.</p>
<p>1.5.1. page 11 Pilot 1</p>	<p>According to the entries in the Pilot's Logbook, the pilot 1 has registered one flight on referred aircraft. That flight was on 22 June 2015, three days before the accident, from Bari in Italy to Split. The flight was registered as "training/route" (TNG/RTE), with duration of 01:50' and pilot 1 was registered as the pilot in command. Besides him on that flight was person 2, also a pilot and employee of ECA. In the Aircraft Log Book there is also entry about this flight.</p>	<p>False statement and wrong assessment of the pilot constellation. On the mentioned flight, pilot 1 was the second pilot, and the person 2 was pilot in command who was not an ECA instructor, and therefore could not give pilot 1 any training. Therefore, flight time on the mentioned flight, the pilot 1 could not log this as his flight time. Pilot 1 has arbitrarily entered incorrect data at ATL. ECA Flight Operations department had not yet checked the returning aircraft logbooks, as these checks by the flight operation department takes approx. 2-3 days, and the day of the accident was a holiday. After the accident, it was no longer possible to change any aircraft documentation. AIN was familiar with all these facts, but did not investigate this information or take it into consideration in their malicious report.</p>
<p>1.5.2. page 12 Pilot 2</p>	<p>In the Aircraft Log Book there are entries about flying of pilot 2 on the aircraft 9A-DLA as follows: - 18 June local flight in duration of 0:25', registered as training flight (TNG, LDSP-LDSP) - 21 June in duration of 0:15', registered as route flight from Split to Sinj (RTE, LDSP-LDSS) Accordingly, pilot 2 had on referred aircraft two flights before the accident with total flight time of 40', and flights are registered as training flights (TNG) and route (RTE). On both flights with him on the aircraft was colleague from the company ECA – person 1, also a pilot.</p>	<p>False and misleading statement. Flight on 18 June had a duration of 0:25', pilot 1 arbitrarily entered as false data in ATL. The other pilot on that flight, ECA Director of Flight Operation, confirmed that he was not on that flight. AIN was familiar with all these, but did not investigate these false information and actual facts.</p>
<p>1.6.4. page 19 Description of fuel system</p>	<p>Picture 6 - Displays the fuel system components of the LA-4-200 aircraft with the note that the carburetor system is shown.</p>	<p>Wrong fuel system graph in the report by the AIN. The ECA aircraft LA-4-200 had the engine IO-360 A1B with a fuel injection system, which is essential data for analyzing the operation and possible causes of engine failure. The AIN is displaying an engine with a carburetor fuel system. The AIN is showing great lack of technical knowledge which is highly concerning to ECA.</p>
<p>1.6.6.1. page 20 Engine history</p>	<p>It is important to note that on 21 June 2015, when the aircraft was taxiing to the runway at Sinj Airport, the engine of the aircraft suddenly stopped working. The pilot immediately restarted the engine and flown the aircraft. When he landed at</p>	<p>This allegation has no substantial evidence, neither was this event known to ECA as the aircraft operator. AIN does not present any facts that confirm this event, and the pilots did not record this event in the aircraft technical logbook.</p>

	<p>Split Airport, the pilot states that he verbally informed the superior person in the company.</p>	<p>It must be noted, that this flight was with pilot 2 who was the pilot in command on the flight where the accident took place. It is in generally not unusual for an engine at low throttle and low RPM setting to sometimes stop running, if the pilot keeps the fuel mixture full rich and when the fuel is not fully burned. This is called "spark plug fouling". Experienced pilots do not keep the engine running below 1,000 RPM and occasionally increase power to burn of any deposits that build up from the led in the aircraft fuel. That the engine could be immediately restarted and continued work and takeoff without any problems is a clear indication that there was no problem with the engine. AIN should be aware of this, and the engine manufacturer, Lycoming even issued a Service Letter L192B explains this phenomenon. AIN does not mention that 2 days before the accident, the aircraft performed a 4 hours flying without any problems. The pilot on that flight was person 2 who did not confirm the event and did not report it or record it in the aircraft books, and did not state it in the statement to the Court. Therefore, this allegation represents AIN's speculation without any evidence and as such is a false fact that is used in analyzing possible causes of engine failure. This event also proves, that if the aircraft would have been operated with a fully charged battery, then the pilots would have had a good chance to restart the engine after it stopped running in the fatal flight. All these facts have not been analyzed by the AIN and are not reflecting the real cause of the accident.</p>
<p>1.6.6.1 Page 20 Aircraft history</p>	<p>In July 2014, after performing the maintenance service, the Aircraft Certificate of Release to Service was issued. The CCAA issued a Certificate of Airworthiness on 18.08.2014 and the 9A-DLA was returned to use. Service works were carried out in Slovenj Gradec. There are no track records of flight of 9A-DLA from Zagreb (LDZA) to Slovenj Gradeca (LISG).</p>	<p>AIN misses to state the important fact that the CCAA, before issuing the Airworthiness Certificate on 18 August 2014, the CCAA also issued the Airworthiness Review Certificate (ARC), confirming that the CCAA had checked the aircraft maintenance documentation and that all maintenance has been correctly carried out and completed. The CCAA could not issue an ARC if the maintenance or any tasks are not entirely properly done and signed. The aircraft, 9A-DLA did not fly from Zagreb to Slovenj Gradec, but was disassembled and transported to service by land transport. Therefore, there is no flight recorded. It is evident, that the AIN did not do a thorough and clear investigation.</p>
<p>1.16.1 page 24 Preliminary exam of the aircraft at the accident site</p>	<p>For safety reasons, the battery of the aircraft was demounted and immediately examined in detail. The battery was also submerged in the sea and suffered minor mechanical damage. Measuring the battery voltage, it was found to give only 6 instead of a minimum of 12 V. Since the battery and almost the majority of the aircraft's electrical equipment were submerged in the sea, it was not possible to determine whether this status of the battery was also before the accident.</p>	<p>AIN's allegation is manipulation of facts and intentional suppression of technical legitimacy. There is a certified court testimony and witness statement - a qualified senior ECA Captain, as Person 2, that the battery was empty before the flight. The main aircraft battery switch was ON for over two days before this flight and therefore it is evident, that the battery was completely drained. In the Provisional Statement by AIN on accident of the Aircraft 9A-DLA dated 24 June 2016, in the chapter on Testing and Laboratory Testing, page 12, it is stated that "<i>Battery of the aircraft was empty</i>". Now in the final report the AIN is trying to change their very own initial statement. From the few minutes of flight, the battery could not be charged. No battery can fill up in 10 minutes of charging, not even a mobile phone battery. To charge this exhausted battery requires a long charging cycle (deep cycle) and the battery should be removed from the aircraft.</p>

		<p>This must be done by an approved battery maintenance organization. Therefore, the AIN allegations are constructed in order to deliberately diminish the liability of the pilot for flying the aircraft with a fully drained battery which is then an unworthy aircraft.</p>
<p>1.61.2. Page 25 Analysis of the technical validity of the propulsion and fuel system</p>	<p>The fuel pipeline from the main tank to the engine pump was not damaged. Approximately halfway between the main tank and the pump in the main line, there was a main filter for fuel purification. By looking at the fuel filters, a mixture of fuel and water was found, most likely sea water. On the inside of the filter casing and the filter itself, a greater amount of corrosion was found, most likely caused or intensified by the action of salt from sea water. Also, pollution in the filter from dust and dirt, brown and black colored, were found as a result of corrosion (Picture 33 in the red circle). It is to be assumed that sea water has entered the fuel system through an injector due to the fact that the aircraft after crash had been several hours submerged in the sea and bearing in mind that traces of water were not found in the main tank.</p>	<p>AIN misrepresents this fact and technically does not understand the fuel system of the aircraft. A certified EASA and FAA Lycoming maintenance organization in Canada, disassembled and tested the 9A-DLA engine fuel system components, and in its report from the 30 May 2010 stated:</p> <ul style="list-style-type: none"> • there is no any sign of physical damage of components of the fuel system or the pipeline system for supply; • large droplets of fresh water, <u>NOT sea water</u>, were found in certain components; • Seawater was not found in any component; • <u>The sweet water found in the components could only come from fuel tank.</u> <p>This independent expert analysis was submitted to AIN in June 2017. Physically, it is impossible for any sea water to flow backwards from the fuel injector, as stated by AIN. Flow through the fuel injector is only in one direction possible. There are check valves in the system to prevent reverse flow. This is confirmed by a statement from the manufacturer of the fuel systems components, Precision Air Motive LLC, for which documentation is available. As water is found in a fuel filter, as well as in the engine fuel pump and fuel injector, it is a proof that this water could only come from a fuel tank. The water wich the pilots failed to drain was pumped by the electric pump through the pipeline system to the fuel filter and the engine. The fuel filter is closed and hermetically sealed metal box (which was not damaged in the accident) and, even though it was in the sea, the seawater cannot physically enter the filter housing in which the filter is located. Dirt in the filter is the normal condition and the filter function is to collect impurities, and in the opinion of the ECA technical service manager with 30 years of experience in aircraft maintenance, the condition of the fuel filter concerned was within normal limits. Therefore, the AIN statement intentionally circumscribes the actual facts of the physical and technological legitimacy of the functioning of the fuel system components, and the possible cause of engine failure is subjectively linked only to the "dirt" in the fuel filter. In truth the engine failed as water from the fuel tank eventually reached the engine. Therefore, such a superficial and misleading way of investigating the cause of the accident by AIN is highly questionable, contrary to the basic investigation of the causes of the accident, which leads to serious doubts about their objectivity, independence and professionalism in this case.</p>
<p>1.61.2. page 27 Fuel filter</p>	<p>It was found that the US FAA has issued a warning in the form of a special CE-13-44 airworthiness bulletin on 30 August 2013, and was tied to aircrafts Lake LA-4-200. This bulletin warns all owners, operators and staff involved in the maintenance of the referred aircraft, of possible aircraft safety threats due to engine power loss during take-off due to insufficient fuel flow for undisturbed engine operation. Furthermore, it has been reported that a number of reports have been received in the past about the aforementioned problems in this type of</p>	<p>AIN's conclusions about the meaning and purpose of the FAA Bulletin are deliberately misread and misrepresented, with the intent to disclose the responsibility of the aircraft operator, ECA for maintenance omissions. The FAA Bulletin is not a "special airworthiness bulletin" as stated by AIN, but the Special Airworthiness Information Bulletin, therefore, is of informational nature only. As the FAA's Bulletin itself clearly indicates:</p> <ul style="list-style-type: none"> - the airworthiness issue to which the Bulletin relates does not have a safety significance that

	<p>aircraft and that they could lead to an accident. It is noted that the original aircraft was fitted with a Bendix fuel filter, model 450-OK with a 40-micron filtration and a maximum flow rate of 20 gallons per hour. This filter is no longer produced, and its main imperfection is that it is mounted in a horizontal position, thus not allowing water sediments to be properly drained but rather accumulating in it.</p> <p>It is questionable whether the operator, pilots and staff involved in aircraft maintenance was aware of the existence of this warning.</p> <p>It was found that the aircraft being the subject of this analysis was fitted with the specified type filter Bendix 450-OK.</p> <p>With this knowledge, the fuel system analysis is the most likely cause of engine failure.</p>	<p>would require the issuance of a directive on airworthiness in accordance with the regulations;</p> <ul style="list-style-type: none"> - the warning clearly states the possibility of "loss of power" on takeoff due to insufficient fuel supply" and not to a complete engine failure "endangering the aircraft safety" as stated by AIN; - the FAA recommends replacing the filter, and pilots should follow the flight procedure described in the flight manual, which includes the obligation to drain all fuel tanks and to turn on the fuel pump during take-off and landing. <p>Pilots of the ECA aircraft operator which were trained and qualified to fly the Lake 9A-DLA had complied with the procedure of the manufacturer's flight manual and the operator's operating manual, and conducted pre-flight check, including the drainage of water from the tank.</p> <p>AIN miss to point that the aircraft was not on take-off when the engine stopped working, but in a horizontal level flight, and that just before that, the aircraft took-off at full engine power when the engine consumed 60% more fuel than the horizontal flight. In the take-off phase the engine consumes the most fuel and the engine operated normally.</p> <p>Hence the fuel filter was not clogged, as the AIN is trying to suggest. Futhermore the FAA Special Airworthiness Information Bulletin is not applicable to fuel consumption in level cruise flight, but rather only to take-off power settings.</p> <p>Besides this, the AIN is aware of this clear indication but did not investigate that the engine failure is not caused by the reduction of fuel flow but by the contamination of water in the fuel.</p> <p>Therefore, this AIN statement is deliberately inaccurate and intends to reduce the liability of pilots 1 and 2 for their omissions and transfer responsibility to the aircraft operator.</p>
<p>1.16.3. page 28 Fuel tank</p>	<p>After dismantling, a large amount of impurities was found, similar to the appearance and composition of the ones found when inspecting the fuel filter. It was found that impurities are mostly the product of corrosion of metal components inside the tanks and to a lesser extent very small sand.</p>	<p>Some residual impurities in the fuel tank is commonly found if aircrafts.</p> <p>In the opinion of the ECA technical service manager with 30-year experience in aircraft maintenance, the condition in the fuel tank was within normal limits.</p> <p>The mandatory pilot's fuel check and draining procedure to drain any water from the fuel tanks would also flush out any impurities or dirt from the tank. Pilots 1 and 2 did not perform the fuel check to drain water from the tank.</p> <p>If the amount of dirt was particularly large, and above the normal limits, fuel and any amount of water could not be drained from the tank because the fuel drain would clog.</p> <p>All Pilots of ECA, which were trained and qualified to operate the Lake 9A-DLA, have always implemented mandatory pre-flight checks, which includes drainage of water from fuel tanks and had entered this in ALB, as evidenced ("PFC Completed A/C OK ").</p> <p>By doing this check, they confirmed, that they drained fuel and checked for water. Therefore, they did not have an outlet clog. If the drain would be clogged, the pilots would call the maintenance service. Only Pilot 2 did not enter the pre-flight check review on "his flights" on June 18 and June 21.</p> <p>Consequently, this AIN statement intentionally incorrectly interprets and exaggerates facts that have not been proven by any evidence, with the intention of reducing the liability of pilots 1 and 2 for their omissions and transfer responsibility to the aircraft operator.</p>
<p>1.17.1 page 29 Maintenance of the aircraft 9A-</p>	<p>The last maintenance was done on 10 July 2014. According to the Maintenance program, the following items should be performed as part of the last maintenance:</p>	<p>AIN allegations represent manipulation of facts and deliberate statement of untruthful facts.</p> <p>All checks have been signed off by an approved maintenance organization.</p> <p>Explicitly the general maintenance, including cleaning of fuel tanks, has been carried out and signed or marked as been performed by an authorized maintenance organization and authorized persons.</p>

<p>DLA</p>	<p>— 'Fuel system - Inspect fuel tank area for damage, leaks, corrosion and general condition' — 'Fuel system -Inspect fuel bladder for security, contamination, leaks and general condition' These two items stated have not been signed by an authorized person as performed.</p>	<p>Based on this documentation, it was precisely the CCAA, before it issued the Airworthiness Certificate on 18.8.2014, who issued the Airworthiness Review Certificate (ARC). With issuing the ARC the CCAA confirms, that it has checked the 9A-DLA aircraft maintenance documentation and that all the maintenance had been carried out correctly and completely. Only after such an airworthiness review, the CCAA can issue an ARC. Also, in the finding and opinion of the court expert who is an inspector of CCAA, and who according to the order of Croatia Insurance reviewed the original documentation on the maintenance of the 9A-DLA aircraft on 30 December 2016, stated that the maintenance of the aircraft in the year prior to the accident was performed according to the manuals of the aircraft manufacturer, engine and propeller, as well as to the approved Aircraft Maintenance Program. There is no evidence for such allegations by AIN.</p>
<p>1.17.2 page 30 Pilot 2</p>	<p>Pilot 2 states that on 25 June 2015 he came to Airport Split because he was called by Person 2 for moving the LA-4-200 from one parking position to the other at the same airport. Pilot 2 was instructed to move the plane by Person 2 orally, and did not know who and on which way this request was made by Person 2.</p>	<p>Not true statement. Person 2 testified that he did not call pilot 2 or anyone else in the matter of moving the aircraft. In addition, it must be noted, that pilot 2 continuously claims he lost memory because of the accident. It is very surprising, that pilot 2 suddenly can remember these details.</p>
<p>1.17.3 page 30/31 Events that compromise air transport safety Events no. 1, 2 i 3</p>	<p>During July and August 2016, AIN <u>received three reports on events that threaten the safety of air transport</u> associated with the ECA. These events are not directly related to the subject aircraft, but point to events and mode of operation of the operator. The first report was received by the ECA through the mandatory reporting system, while the other two were received through the voluntary reporting system, in which the reporter remains anonymous.</p>	<p>This entire chapter of the AIN Report has no link and relevance to investigating the cause of the 9A-DLA aircraft accident, since all stated events are from 2016. This is more than 1 year after the 9A-DLA plane crash, and have no any connection with this accident. By pointing these events as "<i>events that threaten air transport safety</i>" AIN manipulates facts and incorrectly classifies actual events, thus creating a deliberately false image of ECA's business, where AIN violates regulations and misuses powers to investigate accidents and serious aircraft accidents. <u>Event no. 1</u> was reported by ECA as a serious incident of the aircraft, but the AIN itself failed to conduct any investigation on this reported event. Accordance to the regulations and its statutory duties is compulsory for the AIN to investigate serious incident. In this incident, the Swiss maintenance organization made the negligence and omission that could have led to the accident, which was avoided by carrying out a pre-flight check by the flight crew of ECA. AIN did not investigate the causes of this event and did not make any safety recommendations, thereby violating legal obligations and duties. Article 5, paragraph 1 of Regulation 996/2010 requires a mandatory investigation of a serious incident, i.e. an incident involving circumstances indicating that the accident has almost occurred, and Article 9, 2 of the same Regulation for reporting it to EASA and ICAO. At the same time, AIN maliciously displays untruthful facts that have no connection with causes of aircraft 9A-DLA accident and therefore cannot be subject to the Report. These allegations are gross contradiction and a violation to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
<p>1.17.4 Page 31 Inspection and</p>	<p>Irregularities found in the inspection of ECA in August 2016 carried out by the Croatian Civil Aviation Agency. Additionally, <u>during the year 2016</u>, several inspections were carried out by the</p>	<p>This entire chapter of the AIN Report has no link and relevance to investigation of the cause of the 9A-DLA aircraft accident, since all the events are from 2016, that is more than 1 year after the 9A-DLA aircraft crash, and in addition have nothing to do with this accident.</p>

<p>audit from August 2016</p>	<p>Croatian Civil Aviation Agency related to the flight operations in ECA. Several irregularities were found regarding fulfilment of flight documentation, baggage mass calculation and aircraft balancing, flight crew planning and rest time and evaluation of reports from voluntary reporting.</p>	<p>AIN untruthfully, without evidence and maliciously mentions "<i>irregularities found in flight documentation</i>". On the contrary, the ECA had several inspections in Flight Operations without any serious finding, namely:</p> <ul style="list-style-type: none"> • February 2016 inspection without findings; • April 2016 inspection supervises the Operational Center and Training, without any serious findings; • July 2016 inspection audited Flight Operations, only one finding for corrective measure. <p>Documentation on these inspections is available. The false facts in this chapter stated by the AIN and which have no any connection with aircraft 9A-DLA accident can not be subject in the report. These allegations are in gross contradiction and a violation to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>
<p>Chapter 2 - ANALYSIS</p>		
<p>2.1.2. Page 33 Course of events on the day of accident</p>	<p>After ignition, the aircraft remained for fifteen to twenty minutes in the parked position with the running engine in order to 'recharge' the battery.</p>	<p>As stated in 1.16.1 above, the battery was totally drained. The aircraft's last flight was on the 22.06.2015 and the aircraft was parked at 15:15 LT at Spit airport. The pilots tried to start the aircraft on the 25.06.2016 at approx. 16:00 (accident occurred 17:37LT). Hence the aircraft main battery switch was left "ON" for 3 days. This would fully drain any aircraft battery. In the Provisional Statement by AIN on the accident of the Aircraft 9A-DLA dated 24 June 2016, in the chapter on "Testing and Laboratory Testing", page 12, it is stated that "Battery of the aircraft was empty". Now the AIN seems to change their opinion even though apparently "Testing and Laboratory Testing" found the battery empty. Through the few minutes of flight no battery can fill up in a few minutes of charging, not even a mobile phone. To charge this fully exhausted battery requires a long charging cycle (deep cycle) and the battery should be removed from the aircraft. This battery maintenance must be performed by an approved battery maintenance organization. Therefore, the AIN allegations are constructed in order to deliberately diminish the liability of the pilot for deliberately flying the aircraft with a drained battery, which is then rendering the aircraft unworthy. Hence the pilots gross negligently and knowingly operated an unairworthy aircraft.</p>
<p>2.1.3. page 34 Engine failure in flight</p>	<p>Analysis of aircraft maintenance, dirt in tank, fuel system design, clogging of fuel filters and engine shutdown.</p>	<p>See 3.2. above. This allegation of the immediate cause of the accident by AIN is inaccurate, arbitrary and misleading. AIN do not state and does not analyze facts that clearly indicate that the total failure of the aircraft's electrical system is the direct cause of the accident. AIN further fails to analyze the fact, that the aircraft 2 minutes prior to the engine failure performed a take-off with max engine power, where there is approx. 60% more fuel flow than in low power cruise flight. This is a strong indication, that the argument of the AIN is ill-fated and the fuel filter could not be blocked.</p>

<p>2.1.4. page 35 Battery voltage</p>	<p>By measuring the battery voltage after the plane crash, it was found that the battery has only 6 V instead of a minimum of 12 V. After the plane crashed, the battery was submerged in the sea. Therefore, it is not possible to assert that the measured condition was even before the accident, but taking into account all the cognitions already mentioned during the investigation, it is very likely that the battery voltage during the flight in question was inadequate.</p>	<p>See 1.16.1.and 2.1.2. above The conclusions of the AIN analysis are arbitrarily formulated to deliberately reduce the liability of the pilot for flying the aircraft with a drained battery, which is then rendering the aircraft unworthy.</p>
<p>2.1.6. page 37 Qualifications as a factor</p>	<p>For pilots flying on a particular type of aircraft, the company should provide training to adapt to the aircraft type. According to company executives, Lake LA-4-200 aircraft should be used for the purpose of providing logistical support to other aircraft used by the company for commercial flight operations. It is unclear how the ECA company intends to use the Lake LA-4-200 aircraft if the pilots employed in the same company had not been trained to adapt to that aircraft type.</p>	<p>This argument and allegation from the AIN is unqualified, untrue and stupid. Overall training and acquiring of qualifications were controlled by the Flight Operations department under the leadership of Cpt. . It was standard practice in ECA to keep close control of all training and qualification. Pilots are generally ONLY trained and qualified on the aircraft type they operate. There is no obligation of the company to qualify pilots on every aircraft type they operate. This would be unusefull and silly and contrary to safety. Pilots:</p>
<p>2.1.7.3. Page 40 „company culture“</p>	<p>In the period from the last year before the accident, five aircraft pilots were flown the referred aircraft, all employees of the ECA. All flights were recorded in the aircraft book. None of the aforementioned five pilots had been trained to adapt to aircraft type LA-4-200. Given that all of these flights were duly registered in the aircraft book and that it was made available to the responsible persons in the ECA, it can be concluded that those responsible persons were familiar with the flight of LA-4-200 aircraft.</p>	<ul style="list-style-type: none"> • Cpt. CEO • Cpt. Director OPS • Cpt. Person 1 • F/O Person 2 <p>were trained and/or had been qualified for this type of aircraft and were the only pilots who were permitted fly on Lake LA-4-200 at ECA. Evidence available. Pilot 1 and Pilot 2 were not trained or qualified for flying on Lake LA-4-200 and could not fly the aircraft, but they purloined the aircraft. Pilot 2 falsified data on alleged flying with instructor cpt. Director OPS. Witness - person 1, a senior captain of ECA, in court testimony on 15 June 2017. confirmed that he clearly told pilots 1 and pilot 2 "not to fly the aircraft". Company procedures were applied in ECA, and pilot 1 and pilot 2 as irresponsible pilots actually stole the aircraft, and such action is not a subject of regulation and enforcement in any of the companies. <u>See 1.5.1. above.</u> Pilot 1 arbitrarily entered incorrect ATL data and falsified allegedly flying with the instructor. These entries (just a few days before the accident) were not yet checked by the ECA Flight Operations department since the return check would typically take 2-3 days, and the day of the accident was a holiday. After the accident, it was no longer possible to change any aircraft documents. AIN is familiar with all these facts provided by ECA, but did not investigate this information or even comment these facts in their accident report. The AIN statements do not cover nor analyze these facts, and therefore the AIN conclusion is arbitrarily constructed and based on untrue facts in order to deliberately diminish the responsibility of pilot 1 and pilot 2.</p>
<p>2.1.7.1. page 38 Maintenance</p>	<p>CAMO organization of the company ECA did not react to the lack of signatures of an authorized person regarding the items relating to the maintenance of the fuel tank of the aircraft in question.</p>	<p>See 1.17.1. above. All the maintenance, including cleaning of fuel tanks, had been carried out and signed or marked as been performed by an authorized maintenance organization and authorized persons.</p>

	<p>Testing and analysis of event 1 that happened one year after (July 2016)</p>	<p>There is evidence on the performed maintenance. Based on this documentation, it was precisely the CCAA, before it issued the Airworthiness Certificate on 18.8.2014, who issued the Airworthiness Review Certificate (ARC) confirming that it has checked the 9A-DLA aircraft maintenance documentation and that all the maintenance had been carried out correctly and completely. CAMO organization confirmed implemented works and did not have to react on anything. See 1.17.3.</p> <p>Event 1 from 2016 does not have any connection with investigation of the aircraft accident of 9A-DLA. The event referred to by the AIN is totally irrelevant to the accident investigation. By this AIN obviously manipulates and knowingly violets procedure of investigation of the accident of the aircraft 9A-DLA.</p>								
<p>2.1.7.1. page 38 2.1.7.2</p>	<p>Chapters: -Reports on events which compromise the safety of air transport from August 2016 -Termination of employment contracts from July 2016. Inspection audit by CCAA in August 2016.</p>	<p>See 1.17.3. and 1.17.4. above. This chapter of the AIN Report which are referring to events from 2016, that is more than 1 year after the 9A-DLA aircraft accident, has nothing to do with this accident. The event referred to by the AIN is totally irrelevant to the accident investigation. The untruths of the facts in this chapter, which are stated by AIN and which have no any connection with 9A-DLA aircraft accident, can not be subject to this Report. The attempt to place additional blame on ECA by referring to these events must be considered malicious. Furthermore, these allegations are is gross contradiction to EASA Regulation 996/2010 and ICAO document Annex. 13 in which the accident investigation agency must conduct an investigation free of any blame and guilt.</p>								
<p>Chapter 4 – SAFETY RECOMMENDATIONS</p>										
<p>Recommendations to the company ECA</p>	<p>All 5 recommendations.</p>	<p>Stated AIN recommendations for the ECA operator are completely out of context of events and the actual causes of the accident involved.</p>								
<p>CONCLUSIONS OF THE COMPANY ECA ON CAUSES THAT LED TO 9A-DLA AIRCRAFT ACCIDENT</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">1. Pilot 1 and pilot 2 (pilots) used the aircraft without permission (stolen plane)</td> <td style="width: 20%; text-align: right;">MAIN CAUSE</td> </tr> <tr> <td>2. Pilots operated the aircraft without type training and without qualifications</td> <td style="text-align: right;">MAIN CAUSE</td> </tr> <tr> <td>3. Pilot 2 performed illegal and uncertified flight training</td> <td style="text-align: right;">MAIN CAUSE</td> </tr> <tr> <td>4. Pilots performed illegal technical manipulation of the aircraft</td> <td style="text-align: right;">MAIN CAUSE</td> </tr> </table>			1. Pilot 1 and pilot 2 (pilots) used the aircraft without permission (stolen plane)	MAIN CAUSE	2. Pilots operated the aircraft without type training and without qualifications	MAIN CAUSE	3. Pilot 2 performed illegal and uncertified flight training	MAIN CAUSE	4. Pilots performed illegal technical manipulation of the aircraft	MAIN CAUSE
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4. Pilots performed illegal technical manipulation of the aircraft	MAIN CAUSE									

5. Pilots operated the aircraft without mandatory documentation of the aircraft
6. Pilots did not performed the pre-flight check and did not drainage the fuel tank **MAIN CAUSE**
7. Pilots did not have flight permission
8. Pilots did not checked the MEL (Minimum Equipment List). Operated aircraft outside of MEL **MAIN CAUSE**
9. Pilots did not called the maintenance service to replace the aircraft battery
10. Pilots did not fly the aircraft in accordance with specification of the Aircraft Flight Manual
11. Pilots did not used aircraft emergency equipment
12. Pilots did not fly on minimum flight altitude od 1.500 ft., but on a half lower altitude
13. Pilots made wrong decision to return to the runway of the airport
14. Pilots to late made other decision of return to land on sea surface

III. Concluding statement of the ECA on the Draft of Final Report

- 1) For the reasons outlined above, the aircraft operator, ECA, states that the determination of the causes of the 9A-DLA aircraft accident, as stated in the Draft of Final Report by the Croatian AIN, have not been investigated in such a way as to detect all actions, omissions, events or circumstances, which really caused the accident of the aircraft in question.
- 2) ECA does not technically and factually accept, and rejects the numerous allegations and particularly false statements contained in the Draft Report made by the Croatian AIN, as it is argued in this Statement, and considers the Draft of the Final Report subjective, unprofessional and superficial work that did not establish the real causes of the accident with the aim of preventing the future threat to the air transport safety.
- 3) For these reasons, the ECA considers the Draft of Final Report invalid for the purpose of explanation of actual causes of the accident in question, and therefore requests its substantial amendments and corrections with the aim of objective and professional determination of all actual factors causing the accident in question.
- 4) If AIN refuses to accept the content and facts contained in this Statement and the request for substantial amendments and corrections of the Draft of Final Report, 9A-DLA aircraft operator, ECA as an interested person, requires the publishing the ECA statement as an attachment to the Final Report.
- 5) ECA reserves all rights to file a lawsuit against the AIN to cancel and correct the investigation report on the Lake 9A-DLA accident.

Done in Kaštel Štafilić on 07 June 2018

