



FINAL REPORT

of civil aviation safety investigation

CLASSIFICATION

ACCIDENT

Owner

S.C. DAVIDSON S.R.L. from Republic of
Moldavia

Operator

S.C. DAVIDSON S.R.L. from Romania

Manufacturer

AIR CREATION - France

Aircraft

Ixess/arv TANARG 912

Registration country

ROMANIA

Registration

YR-5132

Location

Near „Aerial Club” - Vădeni flight field, Brăila
County

Date and time

28.05.2016 / 20:25 LT

No. A 17- 10

Date: 18.09.2017



ACKNOWLEDGEMENT

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

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

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

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



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SYNOPSIS

CLASSIFICATION	Accident
Owner	S.C. DAVIDSON S.R.L. from Republic of Moldavia
Operator	S.C. DAVIDSON S.R.L. from Romania
Manufacturer	AIR CREATION - France
Aircraft	Ixess/arv TANARG 912
Registration country	ROMANIA
Registration	YR-5132
Location	Near „Aerial Club” - Vădeni flight field, Brăila County, coordinates: N 45° 21' 44,3” E 027° 56' 18,2”
Date and time	28.05.2016 / 20:25 LT

On 28.05.2016, the motorized hang glider, identified YR-5132, piloted by its owner, took-off from "Aerial Club" - Vădeni flight field, Brăila County, in order to perform a flying lap on the left side, at the height of 100 m.

The aircraft entered the landing direction with a speed of almost 90 km/h and a glideslope at a smaller angle than the optimal one, due to which the pilot maintained the engine revving to maintain a constant flying speed. At one point the pilot has estimated that he had the optimum height and distance for landing and he reduced the engine rpm, which led to the aircraft rapid loss of height.

The motorized hang glider frontally hit the embankment of DJ 221 B, at a distance of approximately 100 m from the landing field threshold, and then it rolled over on the road surface, leading to the aircraft damage and serious injury of the pilot.

The cause of the accident is the aircraft rapid descent on the glideslope, after reducing the engine rpm at idle. The favoring causes were the incorrect estimation of height and distance from the targeted point for landing, as well as the lack of experience on this aircraft type and the long interruption from flight.

The accident was notified in written to CIAS, being registered with no. 0680/2016.

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

FACTUAL INFORMATION

1.1 History of accident

On 28.05.2016 "Aerial Club" – Vădeni (Brăila county) organized an *Fly In* event, attended by several types of aircraft. Some of them were positioned on the aerodrome one day before the event. Thus, on 27.05.2016, the owner of a motorized hang glider aircraft, identified YR-5132, along with other two ULM aircraft, performed a flight from Bucharest to "Aerial Club" – Vădeni flight field, in order to perform a static display at the meeting organized within this event.

After the Fly In event that took place on 05.28.2016, around 18:30 LT, the motorized hang - glider YR-5132, having onboard its owner and a flight instructor, took-off (according to statements) for a training flight in order to renew the owner's ULM pilot license.

Around 20:10 LT, the pilot of YR-5132 ULM aircraft decided to perform another flight, but this time without the instructor onboard, and he took-off in order to perform a flying lap on the left side, at 100 m height. After the second turn he required the flight coordinator approval for landing. Then he performed the third and the fourth turns to position itself on landing direction 360°, intending to land shortly (before the runway threshold) to reduce the roll to the parking position.

The aircraft aligned on the landing direction with a speed of almost 90 km/h and a glideslope at a smaller angle than the optimal one, due to which the pilot maintained the engine revved to keep a constant speed. At one point the pilot has estimated that he had the optimum height and distance for landing and he reduced the engine rpm, which led to the aircraft rapid loss of height.

Due to the height at which the aircraft was, the pilot had no more time to recover the motorized hang glider, which frontally hit the embankment of DJ 221 B County road, at a distance of almost 100 m from the landing field threshold. The aircraft rolled over on the road surface, leading to the aircraft damage and serious injury of the pilot.

The aircraft position was modified to extract the victim from the cockpit and to provide first aid by the personnel of "Aerial Club" - Vădeni. After modifying the aircraft position, it was accidentally launched its ballistic parachute.

The accident occurred on the following coordinates:

Latitude: 45° 21' 44,3" N
Longitude: 027° 56' 18,2" E.



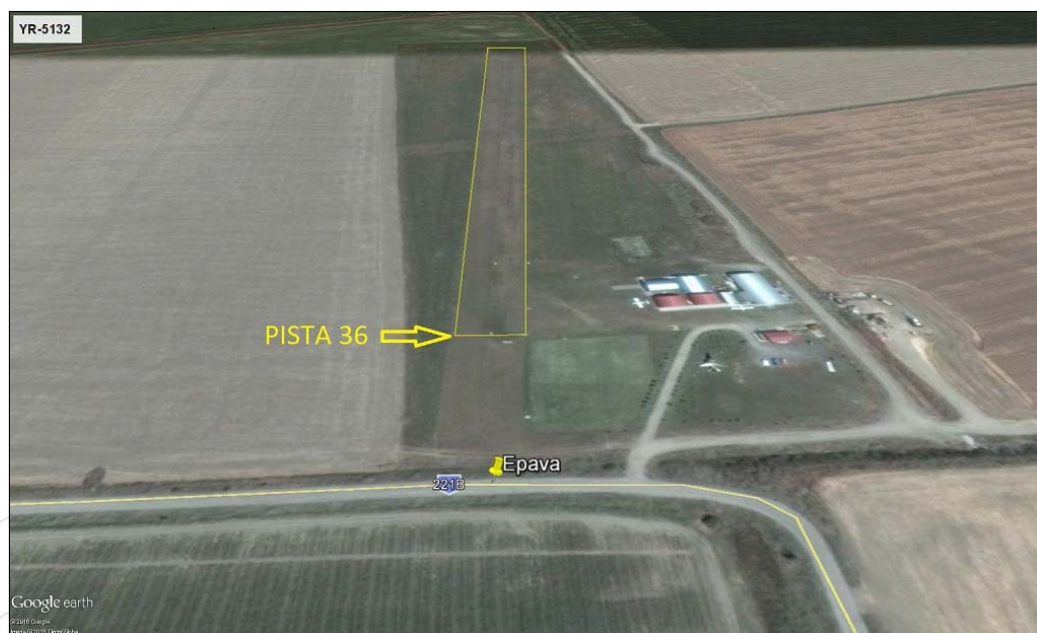


Fig. 1 Accident site

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Serious	1	-	-
Minor	-	-	-
None	-	-	-
TOTAL	1	-	-

1.3 Damage to aircraft

After the impact, the aircraft suffered substantial damage to: the tricycle landing gear, cockpit, braking system, instrument panel and propeller hub.



Fig. 2 Landing gear front wheel



Fig. 3 Instrument panel





Fig. 4 Left and right lateral view of motorized hang-glider



Fig. 5 front view of motorized hang-gliderhang



Fig. 6 Broken propeller hub

1.4 Other damage

N/A.

1.5 Personnel information

Pilot	Male, 56 years old
License	Motorized Ultralight Aircraft Pilot License, issued on 08.12.2009, expired
Qualification type	Motorized hang-glider, expired since 26.10.2011
Medical certificate	Class 2, expired since 08.09.2010
Flight experience	46 flight hours on motorized hang-glider



1.6 Aircraft information

Owner	S.C. DAVIDSON S.R.L from Republic of Moldavia
Owner (Operator)	S.C. DAVIDSON S.R.L. from Romania
Identification Certificate	Valid until: Unlimited
Permit to Fly	Valid
Total number of flight hours	292:30 h
Class	Motorized hang-glider
Aircraft type	iXess/arv TANARG 912
Registration	YR - 5132
Serial number	T07018
Rotax 912 UL Engine	Serial number 6771570
Propeller	Arplast / 3 blades

TANARG 912 was built as a tricycle long-range cruise in order to comply to the ultra-light category of the International Aeronautical Federation, having the maximum take-off weight of 472,5 kg and equipped with ballistic parachute. This is a motorized hang-glider anchored with cable connections, with "wing-up", flown through weight transfer, with two "in-tandem" seats, open cockpit, landing tricycle with streamlined wheels and a single engine. The aircraft is of mixed construction, attached with aluminum tubes, composite materials and carbon fiber panels, with double wing covered with "Dacron" material. The wing Air Creation iXess 15 has a span of 10 m and a lifting surface of 15 sqm.

The engine mounted on it is of the type Rotax 912 UL – 4 strokes, 4 cylinders, liquid cooling, "dual - ignition" 80hp (60kW).



Fig. 7 Example of similar aircraft



General characteristics:

- Crew: one
- Capacity: one passenger
- Wing Span: 10 m
- Height: 3,45 m
- Wing surface: 15 m²
- Empty weight (standard): 186 kg
- Maximum weight without wing: 410 kg
- Fuel capacity: 65 liters
- Engine: Rotax 912UL
- Propeller: 3 blades of composite material "Arplast hélice", diameter: 1,66 m

Performances:

- Maximum speed: 157 km / h
- Cruise speed: 135 km / h
- Climbing rate: 6 m / s

The motorized hang-glider wing was installed according to the Maintenance and Operation Manual "Air Creation iXess 15". The figure below presents an extract from this manual.

c) Performance at maximum take-off weight						
TRIKE	TWIN 503	TWIN GTE 503 SL/SE/S	TWIN GTE 582 SL/SE/S (BUGGY CLIPPER)	GTE 912 SE/S (CLIPPER)	arv TANARG 582	arv TANARG 912
Stall speed	65 km/h 40 mph	65 km/h 40 mph	65 km/h 40 mph	65 km/h 40 mph	65 km/h 40 mph	65 km/h 40 mph
Recommended approach speed	85 km/h 53 mph	85 km/h 53 mph	85 km/h 53 mph	85 km/h 53 mph	85 km/h 53 mph	85 km/h 53 mph
Landing distance from 50 ft height	175 m 574 ft	175 m 574 ft	175 m (180 m) 574 ft (591 ft)	175 m (180 m) 574 ft (591 ft)	170 m 558 ft	170 m 558 ft

Instruction and Maintenance Handbook iXess 15	EDITION : MARS 2005	PAGE : 4
AIR CREATION Aérodrome de Lanas - 07200 AUBENAS - France		
Tél. : 33 (0) 4 75 93 66 66 - Fax : 33 (0) 4 75 35 04 03 - Internet : www.aircreation.fr		

Fig. 8 Extract from the wing maintenance and operation manual

According to the aircraft logbook, it was equipped at the beginning of the year with a new engine, to which it was performed ground run according to the maintenance and operating manual "Air Creation Tanarg 912". After the engine run, the aircraft was verified on ground and in-flight according to Annex 4 of RACR-CCO ULM and the permit to fly validity was prolonged.

Meteorological information

According to data obtained from the National Meteorological Administration (see figure below), the weather conditions registered on 28.05.2016, at 20:00 LT (17:00 UTC) at Brăila meteorological station, situated at almost 7 km from the accident site, were as follows:

- Air temperature = 24°C;
- Cloudiness = 4/8 (partly cloudy sky);
- Horizontal visibility = 20 km;
- Wind speed = 1-2 m/s;
- Wind direction = V;
- Clouds = Cb (cumulonimbus) with basis at 600 - 1000 m;
- Atmospheric pressure = 1013,1 mmHg.

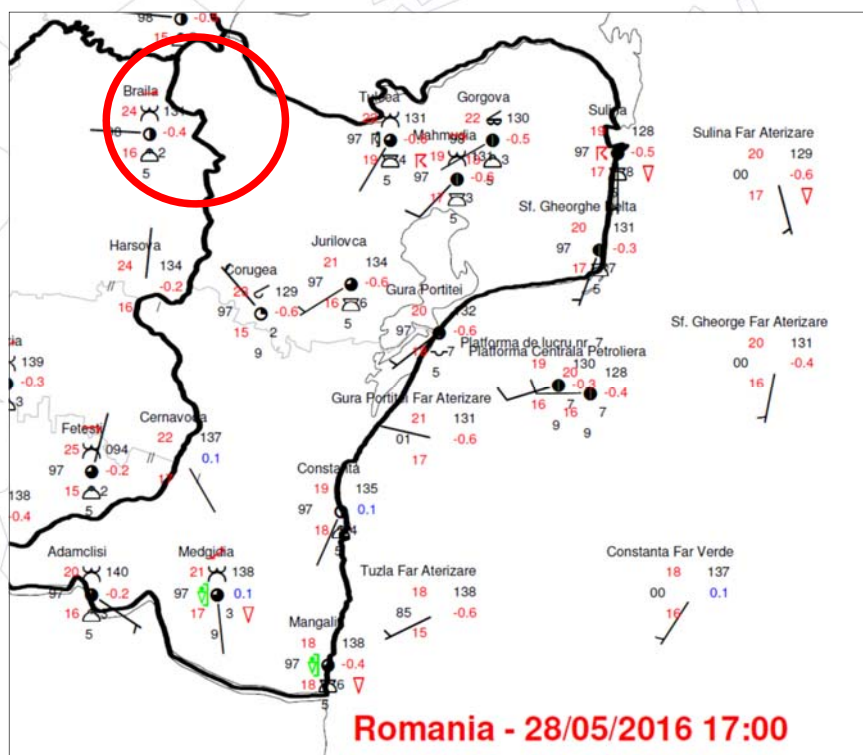


Fig. 9 Meteorological map valid at 28.05.2016, at 20:00 LT (17:00 UTC)

The sun position on 28.05.2016, at 20:25 LT, in the area of Brăila locality, is presented in figure 10 below. Considering that the lap was performed on the left side of runway 36, on the long side, the pilot having the sun on the right and during the turns 3 and 4 the sun was behind, namely laterally on the left, the investigation commission considers that the sun position did not influence this occurrence.

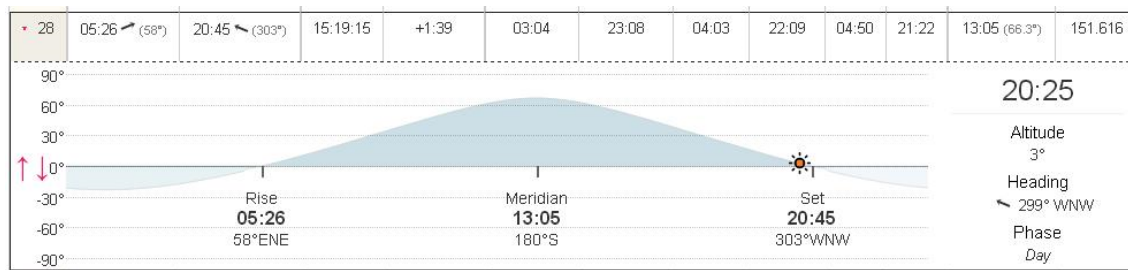


Fig. 10 Sun position around the time of accident occurrence

1.6 Aids to navigation

N/A.

1.7 Communications

The aircraft flights were performed with radio connection with the Flight Leader of "Aerial Club" - Vădeni, on the frequency of 123.45 Mhz.

1.8 Flight field data

"Aerial Club" – Vădeni flight field is positioned at 5 km South West from Galați and 5 km North from Brăila. This aerodrome belongs to the class of flight fields, other than the authorized aerodromes and has a grass runway oriented on 180° - 360°, of 30 m width and 550 m length. The runway elevation is 2 m. In the Northern part of the runway, at 150 m from the threshold, there is an electrified railway embankment, and in the South, there is the embankment of DJ 221 B County road.

1.9 Flight recorders

This aircraft is not equipped with flight data recorders (FDR) or cockpit voice recorders (CVR).

1.10 Wreckage and impact information

The aircraft impact occurred in the embankment of DJ 221 B at a distance of almost 100 m from the landing runway threshold of "Aerial Club", on direction 360°. After the impact the aircraft rolled-over on the road surface.



Fig. 11 Site of first impact



Fig. 12 Final position on DJ 221 B roadway

Subsequently the aircraft's position was changed to remove the victim from the cockpit (see fig. 13). During the aircraft changing position, due to tensions in the aircraft structure, the ballistic parachute was accidentally launched (fig 14). After examining the wreckage, the investigation commission found that the operating handle of ballistic parachute was secured (see figure 15).



Fig. 13 Aircraft position after victim removal



Fig. 14 Ballistic parachute



Fig. 15 Safety pin of ballistic parachute operating handle



1.11 Medical and pathological information

After the accident, the pilot suffered multiple fractures requiring hospitalization.

1.12 Fire

N/A.

1.13 Survival information

After the accident occurrence, the victim was removed from the cockpit and he was given the first aid from the personnel of "Aerial Club" until the ambulance arrived. The victim was initially transported to Brăila County Hospital and then transferred to "Bagdasar –Arseni" Clinical Emergency Hospital, in Bucharest.

1.14 Tests and research

N/A.

1.15 Management and organization information

Given that, according to the statements, the pilot was in the process of license renewing, the investigation commission considered for analysis the following articles in the Romanian Civil Aviation Regulation RACR-LPAN ULM - *Flying civil aeronautical personnel licensing – motorized ultralight aircraft*, edition 1/2007.

CAPITOLUL 2

Licentierea pilotului de aeronave ultrausoare motorizate

RACR-LPAN ULM.2010 - Conditii de conformare
Toate activitatile mentionate la RACR-LPAN ULM.1005 se desfasoara numai cu respectarea stricta a cerintelor specifice aplicabile cuprinse in prezenta reglementare.

RACR-LPAN ULM.2015 - Calitatea de membru al echipajului de conducere - Licente nationale

a) O persoana este autorizata sa actioneze ca membru al unui echipaj de conducere pentru o aeronava ultrausoara motorizata, identificata/inmatriculata sau care opereaza in Romania, numai daca detine o licenta, emisa/echivalata/recunoscuta de autoritatea de certificare, in termen de valabilitate, care demonstreaza conformarea cu cerintele specificate in prezenta reglementare si care este corespunzatoare atributiilor pe care persoana in cauza trebuie sa le indeplineasca la bord; si

b) Detinatorul unei licente de pilot de aeronave ultrausoare motorizate este obligat sa poarte asupra sa licenta si certificatul medical corespunzator, ori de cate ori se afla la bordul unei aeronave ultrausoare motorizate, identificata/inmatriculata sau care opereaza in Romania, in scopul indeplinirii atributiilor care-i revin in calitate de membru al echipajului de conducere.

I. Obținerea, revalidarea și reinnoirea licenței de pilot de aeronave ultrausoare motorizate
A. Obținerea licenței de pilot de aeronave ultrausoare motorizate
 RACR-LPAN ULM.2040 - Condiții generale
 Pentru obținerea licenței de pilot de aeronave ultrausoare motorizate, solicitantul trebuie să îndeplinească următoarele condiții generale:
 (a) să aibă vârsta de 16 ani împliniți; și
 (b) să fie detinator al unui certificat medical corespunzător, în termen de valabilitate, emis în conformitate cu cerințele specificate în prezenta reglementare.

RACR-LPAN ULM.2045 - Condiții specifice
 Pentru obținerea licenței de pilot de aeronave ultrausoare motorizate, suplimentar față de condițiile generale specificate în RACR-LPAN ULM.2040 de mai sus, solicitantul trebuie să:
 (a) demonstreze că a absolvit, în ultimele 12 luni înainte de data înregistrării cererii, un curs (program) de pregătire teoretică specifică desfășurat sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare; și
 (b) demonstreze că a absolvit, în ultimele 12 luni înainte de data înregistrării cererii, un curs (program) specific de pregătire practică, la sol și în zbor, desfășurat sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare; și
 (c) să obțină minim 75% la examinarea teoretică scrisă la fiecare din disciplinele menționate în RACR-LPAN ULM.2055 (a); și
 (d) să fie declarat "ADMIS" în urma testului de îndemânare practică, la sol și în zbor, de către un examinator autorizat conform RACR-LPAN ULM, Capitolul 2, V.
 (e) Solicitantul demonstrează că a absolvit un curs (program) de pregătire teoretică specifică și un curs (program) specific de pregătire practică, la sol și în zbor, desfășurate conform prevederilor RACR-LPAN ULM.2045 (a), respectiv (b), printr-o fișă de pregătire teoretică și practică la sol și în zbor, completată și semnată de către pilotul instructor sub supravegherea căruia a fost finalizat cursul (programul) respectiv (teoretic și/sau practic).
 Modelul fișei de pregătire teoretică și practică la sol și în zbor este prezentat în Anexa 5.
 (f) Solicitantul demonstrează examenului autorizat că a absolvit un curs (program) specific de pregătire practică în zbor prin carnetul de zbor în care a fost consemnată, sub semnatura pilotului instructor care l-a instruit, activitatea de zbor necesară pregătirii conform RACR-LPAN ULM.2045 (b), precum și prin fișă prevăzută în Anexa 5.
 (g) Continutul cursului (programului) de pregătire teoretică specifică se stabilește (aplica specific) de către pilotul instructor sub supravegherea căruia acesta se desfășoară, având incluse disciplinele prevăzute în RACR-LPAN ULM.2055.

RACR-LPAN ULM.2060 - Pregătirea practică, la sol și în zbor
 (a) Cursul (programul) de pregătire practică, la sol și în zbor, are o durată minimă recomandată, pe clase de aeronave ultrausoare motorizate, după cum urmează:
 (i) pentru avioane ultrausoare: minimum 40 de ore de zbor, incluzând minimum 10 ore de zbor în simplă comandă și 5 ore de zbor în raid cu aterizări pe două terenuri diferite, altele decât cel de decolare, efectuate sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare;
 (ii) pentru motodeltaplane: minimum 25 de ore de zbor, incluzând minimum 5 ore de zbor în simplă comandă și 5 ore de zbor în raid cu aterizări pe două terenuri diferite, altele decât cel de decolare, efectuate sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare;
 (iii) pentru motoparapante/motoparasute: minimum 15 de ore de zbor, incluzând minimum 3 ore de zbor în simplă comandă și 3 ore de zbor în raid cu aterizări pe două terenuri diferite, altele decât cel de decolare, efectuate sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate,

emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare;
 (iv) pentru elicoptere ultrausoare: minimum 40 de ore de zbor, incluzând minimum 10 ore de zbor în simplă comandă și 5 ore de zbor în raid cu aterizări pe două terenuri diferite, altele decât cel de decolare, efectuate sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare;
 (v) pentru autogire ultrausoare: minimum 40 de ore de zbor, incluzând minimum 10 ore de zbor în simplă comandă și 5 ore de zbor în raid cu aterizări pe două terenuri diferite, altele decât cel de decolare, efectuate sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare;
 (vi) pentru dirijabile ultrausoare: minimum 20 de ore de zbor, incluzând minimum 3 ore de zbor în simplă comandă și 3 ore de zbor în raid cu aterizări pe două terenuri diferite, altele decât cel de decolare, efectuate sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare;
 (b) Cursul (programul) de pregătire practică, la sol și în zbor, trebuie să se desfășoare numai sub supravegherea unui pilot de aeronave ultrausoare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare.

C. Reinnoirea licenței de pilot de aeronave ultralegionare motorizate

RACR-LPAN ULM.2085 - Condiții generale

Pentru reinnoirea licenței de pilot de aeronave ultralegionare motorizate, solicitantul trebuie să îndeplinească următoarele condiții generale:

(a) certificatul medical corespunzător emis în conformitate cu cerințele specificate în prezenta reglementare este în termen de valabilitate.

RACR-LPAN ULM.2090 - Condiții specifice

Reinnoirea licenței de pilot de aeronave ultralegionare motorizate se face pentru o perioadă de 24 de luni, cu respectarea prevederilor RACR-LPAN ULM.2085 de mai sus, dacă solicitantul demonstrează, într-o manieră acceptabilă autorității de certificare, că:

(a) a absolvit, cu cel mult 12 luni înainte de data înregistrării cererii de reinnoire, un curs (program) de pregătire teoretică specifică pentru reinnoirea licenței, desfășurat sub supravegherea unui pilot de aeronave ultralegionare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare; și

(b) a parcurs, cu cel mult 12 luni înainte de data înregistrării cererii de reinnoire, un curs (program) specific de reantrenare practică, la sol și în zbor, pe aeronave ultralegionare motorizate din clasa pentru care solicită reinnoirea licenței, desfășurat sub supravegherea unui pilot de aeronave ultralegionare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare. Durata și conținutul cursului (programului) de reantrenare practică, la sol și în zbor, pentru reinnoirea licenței (inclusiv numărul de decolări și aterizări) este stabilită de pilotul instructor, în funcție de perioada de întrerupere și de clasa de aeronave ultralegionare motorizate pentru care se solicită reinnoirea și cuprinde minimum 3 ore de zbor, incluzând 10 decolări și 10 aterizări; și

(c) a promovat examinarea teoretică scrisă, cu un examinator autorizat conform RACR-LPAN ULM, Capitolul 2, V, la fiecare din disciplinele menționate în RACR-LPAN ULM.2055 (a). Baremul de promovare este de 75%, pentru fiecare disciplină; și

(d) a promovat, ulterior finalizării programului de reantrenare practică, la sol și în zbor, un test de verificare a competenței în zbor cu un examinator autorizat conform RACR-LPAN ULM, Capitolul 2, V.

(e) Pilotul de aeronave ultralegionare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare, sub a cărui supraveghere s-a finalizat cursul (programul) de pregătire teoretică specifică pentru reinnoirea licenței, eliberează absolvenților cursului (programului) respectiv un

certificat/atestat corespunzător, într-o formă agreată de autoritatea de certificare.

(f) Pilotul de aeronave ultralegionare motorizate detinator al calificării de instructor, în termen de valabilitate, emisă/echivalată/recunoscută în conformitate cu cerințele din prezenta reglementare, sub a cărui supraveghere s-a finalizat cursul (programul) specific de reantrenare practică, la sol și în zbor, pe aeronave ultralegionare motorizate din clasa pentru care se solicită reinnoirea licenței, eliberează absolvenților cursului (programului) respectiv un certificat/atestat corespunzător, într-o formă agreată de autoritatea de certificare.

(g) Durata totală a cursului (programului) de reantrenare practică la sol și în zbor, prevăzut în RACR-LPAN ULM.2090 (b), este proporțională cu perioada de întrerupere de la data expirării valabilității licenței, astfel:

- (i) 3 ore de zbor pentru întrerupere mai mică de 2 ani;
- (ii) 5 ore de zbor pentru întrerupere mai mică de 5 ani;
- (iii) 7 ore de zbor pentru întrerupere mai mare de 5 ani.

(h) Solicitantul demonstrează că a absolvit un curs (program) de pregătire teoretică specifică și un curs (program) specific de reantrenare practică la sol și în zbor, desfășurate conform prevederilor RACR-LPAN ULM.2090 (a), respectiv (b), printr-o fișă de pregătire teoretică și practică la sol și în zbor, completată și semnată de către pilotul instructor sub supravegherea căruia a fost finalizat cursul (programul) respectiv (teoretic și/sau practic).

(i) Certificatul/atestatul corespunzător agreat de autoritatea de certificare, prevăzut în RACR-LPAN ULM.2090 (e), este constituit de fișă de pregătire teoretică și practică la sol și în zbor prevăzută la RACR-LPAN ULM.2055.

(j) Certificatul/atestatul corespunzător agreat de autoritatea de certificare, prevăzut în RACR-LPAN ULM.2090 (f), este constituit de fișă de pregătire teoretică și practică la sol și în zbor prevăzută la RACR-LPAN ULM.2060.



RACR-LPAN ULM.2095 - Cursul (programul) de pregătire teoretică pentru reînnoirea licenței de pilot de aeronave ultraușoare motorizate - Durata și conținut

(a) Durata și conținutul cursului (programului) de pregătire teoretică specifică pentru reînnoirea licenței de pilot de aeronave ultraușoare motorizate sunt stabilite în funcție de perioada de întrerupere și de clasa de aeronave ultraușoare motorizate pentru care se solicită reînnoirea, fără a depăși însă durata și conținutul cursului (programului) de pregătire teoretică pentru obținerea licenței de pilot de aeronave ultraușoare motorizate, conform celor specificate la RACR-LPAN ULM.2055.

(b) Durata cursului (programului) de pregătire teoretică specifică este proporțională cu perioada de întrerupere de la data expirării valabilității licenței, astfel:

- (i) 10 ore pentru întrerupere mai mică de 2 ani;
- (ii) 15 ore pentru întrerupere mai mică de 5 ani;
- (iii) 25 de ore pentru întrerupere mai mare de 5 ani.

(c) Conținutul cursului (programului) este stabilit de pilotul instructor sub supravegherea căruia acesta se desfășoară.

ANALYSIS

2.1 Flight

In the final part of landing, the pilot decided to land before the runway, in a grassy area, in order to roll as less as possible to the parking position. Considering the runway length (550 m), as well as the necessary distance for landing for TANARG 912 aircraft of 170 m, the investigation commission considers that the pilot would have had enough space to land safely.

In order to obtain an optimal glide slope, the pilot should have maintained a recommended speed of 85 km/h and, by adjusting the engine rpm in correlation with the slope angle, to maintain a constant descent rate. In this case, to land before the runway, the pilot chose a glide slope below the optimal one, but he reacted in the same way he did for the slope he used a flight before, with the instructor, reducing the engine rpm when the glide slope did not provide a descent angle that would have been enough to generate the necessary lift. Thus, with engine on idle, the aircraft speed reduced, leading to aircraft rapid loss of height, followed by the violent impact with the embankment of DJ 221B.

2.2 Operational

For the analysis of this accident there were also taken into account, especially the steps followed by the pilot to obtain and renew the motorized ultralight aircraft pilot license (ULM).

Thus, the investigation commission found that after obtaining the ULM pilot license in 2009, the pilot did not perform any flight for almost 2 years and 5 months. Due to license expiration, the pilot started a ground and in-flight practical retraining course to renew his license, which was completed in March 2012. This training program was made under the supervision of the instructor and examiner belonging to the certification authority, but the flights were performed with the pilot's medical certificate expired. The administrator of „Aerial Club” – Vădeni flight filed was the instructor under whose supervision it was undertaken the theoretical part of this course.



After finishing the specific program (course), in April 2012, the pilot filed an application (Annex 7 to RACR-LPAN ULM) to the certification authority through which he required the renewing the ULM pilot license. After the submitted application, this was not favorably solved because the pilot did not submit a valid medical certificate for the entire period in which he performed the flight activity, nor he proved the completion of the training flight activity according to the provisions of RACR-LPAN ULM.

After April 2012, it followed a period of almost 4 years and 2 months in which the pilot performed no other flights.

According to statements, in 28.05.2016 the pilot restarted the practical retraining flights in order to renew his license.

The investigation commission found a discrepancy between the pilot's logbook, in which the interruption from flight was of 6 years and 5 months, and the ground and in-flight theoretical and practical training sheet for renewing the flight license, according to which the interruption from flight was of 4 years and 2 months.

A day before the accident, the pilot along with the examiner instructor and another person, each with his own motorized hang-glider, took-off from Bucharest and landed on "Aerial Club" – Vădeni flight field.

In the day of the occurrence, after the festival that was held on this flight field finished, the pilot, according to his statement, performed a retraining flight with the examiner instructor, to renew his ULM pilot license, before the flight in which the accident took place.

2.3 Pilot qualification

In the opinion of the investigation commission, the pilot was not qualified to perform any flight type, because he had the medical certificate expired since 08.09.2010 (for 5 years and 9 months), but the ULM pilot license was also expired since 26.10.2011 (for 4 years and 7 months) therefore the pilot should not have performed the flight from Bucharest to Vădeni.

2.4 Operational procedures

According to RACR-LPAN ULM, the pilot undertaken the ground and in-flight practical retraining course (program) in April 2012 and the three flights in May 2016 without complying with the provisions of RACR-LPAN ULM.2085 – *General conditions*: "To renew the motorized ultralight aircraft pilot license, the applicant should meet the following general conditions:

(a) the appropriate medical certificate issued according to the requirements specified in this regulation is valid."



Thus, by performing the in-flight practical retraining flight with the examiner instructor, in the accident day, there were not followed the provisions of Chap. 2 - "Renewing of motorized ultralight aircraft pilot license" both by the pilot, but also by the examiner instructor.

The investigation commission also analyzed the provisions of the Romanian civil aviation regulation RACR-DEMO "Aerial demonstrations" edition 1/2015, valid on the date of the accident occurrence, to determine the obligations of *Fly In* meetings organizer. Even if this regulation defines the *Fly In* activity, it doesn't regulate any obligation for these organizers, although such activities are open to the public.

Through the recommendation no. **SR-22.ACC.2012-06-17.Festival R-40.YR-5287.PH**, CIAS recommended for RCAA to take measures on the inclusion in RACR system of a regulation on the organization of some aviation events regardless their name (air meeting, aerial show, fly-in) through which to impose some minimum requirements on the safety means that should be ensured. But on the date of the accident occurrence, in the aviation regulation RACR-DEMO "Aerial demonstrations" edition 1/2015 the organization of a *Fly In* activity was included only as a definition.

CONCLUSIONS

3.1 Findings

The investigation commission of this occurrence found the following:

- the aircraft was equipped with wing and engine according to the maintenance manual and had a valid permit to fly;
- the pilot was not qualified to perform any flight type, because on the date of accident occurrence, the pilot had the medical certificate expired for more than 5 years and the permit to fly for more than 4 years;
- the pilot performed the flight from Bucharest to Vădeni in single command;
- between the pilot's logbook and the ground and in-flight theoretical and practical sheet for renewing the permit to fly there are discrepancies on the pilot's interruption from flight;
- the pilot's theoretical and practical retraining to renew the motorized ultralight aircraft pilot license was undertaken according to RACR-LPAN ULM.2090 and 2095, but without following the requirements of RACR-LPAN ULM.2085;
- the pilot along with the examiner instructor performed a retraining flight in order to renew the ULM pilot license;
- the pilot performed the second flight of the day without instructor onboard, and it consisted of lap on the left side, at the height of 100 m, choosing to land before the runway, closer to the parking position, to reduce rolling.
- the aircraft position was modified to extract the victim from the cockpit and to offer him the first aid by the specialized personnel. During modification of the aircraft position the aircraft ballistic parachute was accidentally launched;



- The aviation regulation RACR-DEMO "Aerial demonstrations" edition 1/2015 do not specify any obligations and any rights for the organizers of *Fly In* activities.

3.2 Causes of the accident

The cause of the accident is the aircraft rapid descent on the glide slope, after reducing the engine rpm to idle.

Favoring causes:

- incorrect estimation of height and distance to the targeted point for landing;
- lack of experience on this aircraft type and long interruption from flight.

3.3 RECOMMENDATIONS

The investigation commission issues the following safety recommendations:

1. It is recommended for the Romanian Air Club that before starting the ground and in-flight practical retraining courses (programs) to revalidate and renew the motorized and unmotorized ultralight aircraft pilot licenses, to make sure that the instructor under whose supervision will be performed the flights, shall check if the applicant has an appropriate valid medical certificate.
2. It is recommended for the Ministry of Transports to complete the aviation regulation RACR-DEMO with a requirement that the organizers of *Fly In* aviation events, air shows, aero festivals etc. to check the validity of pilots' documents and also of the aircraft landing and taking-off during the entire deployment period of these events.
3. Back to the recommendation no. **SR-22.ACC.2012-06-17.Festival R-40.YR-5287.PH** through which CIAS recommended to RCAA to take measures on the inclusion in RACR system of a regulation on the organization of some aviation events regardless their name (air meeting, aerial show, fly-in) through which to impose some minimum requirements on the safety means that should be ensured and we repeat this recommendation to RCAA.

Note: The documents and analysis objects used for the issuance of the flight safety investigation Report are confidential and are archived at the Civil Aviation Safety Investigation and Analysis Center, according to legal provisions.



Comisia de investigație numită în baza Deciziei nr. 15 din 31.05.2016

Președinte comisie: Cristian TECUCEANU

Membrii: Lucian MARINESCU

Data:

Văzut

Șef Serviciu Investiții

