AIR ACCIDENT INVESTIGATION & AVIATION SAFETY BOARD

Accident Report a/c HA-SUD
Tympaki Airport, Crete
29th June 2008

Report No 06 / 2009

MINISTRY OF TRANSPORT & COMMUNICATIONS

HELLENIC REPUBLIC
MINISTRY OF TRANSPORT & COMMUNICATIONS

AIR ACCIDENT INVESTIGATION AND AVIATION SAFETY BOARD (AAIASB)

Accident Report a/c HA-SUD
Tympaki Airport, Crete
29th June 2008

06 / 2009

ACCIDENT INVESTIGATION REPORT
06 / 2009

Accident of the a/c HA-SUD
near Tympaki Airport, Crete on 29th June 2008

The accident investigation was carried out by the Accident Investigation and Aviation Safety Board in accordance with:

- **ANNEX 13**
- **Hellenic Republic Law 2912/2001**
- **E.U. Directive 94/56**

The sole objective of the investigation is the prevention of similar accidents in the future.

The Accident Investigation and Aviation Safety Board

Chairman
Captain Akrivos D. Tsolakis

Members

George Kyriakopoulos
Lawyer

Helias Nikolaidis
Captain

George Stylios
Professor TEI

Triantaphilos Tsotinidis
Aeronautical Engineer

Secretary
John Papadopoulos

TABLE OF CONTENTS

SYNOPSIS **1**

1 FACTUAL INFORMATION **2**

1.1 History of flight 2

1.2 Injuries to persons 4

1.3 Damage to Aircraft 4

1.4 Other damage 5

1.5 Pilot's information 5

1.6 Aircraft Information 6

1.7 Meteorological Information 9

1.8 Aids to Navigation 10

1.9 Communications 10

1.10 Aerodrome information 10

1.11 Flight Recorders 11

1.12 Wreckage and Impact Information 11

1.13 Medical and Pathological Information 11

1.14 Fire 11

1.15 Survival Aspects 12

1.16 Tests and Research 12

1.17 Organizational and Management Information 12

1.18 Additional Information 13

1.19 Useful or Effective Investigation Techniques 14

2 ANALYSIS **14**

2.1 General 14

2.2 The Flight 15

3 CONCLUSIONS **16**

3.1 Findings 16

3.2 Possible Causes 18

OPERATOR:	SKY-CAR Kft
OWNER:	KAPOS AIRPORT Kft
MANUFACTURER:	CESSNA AIRCRAFT COMPANY USA
TYPE:	CESSNA 182 C
NATIONALITY:	HUNGARIAN
REGISTRATION DATA:	HA - SUD
SITE OF ACCIDENT:	Tympaki Airport, Crete Island
DATE & TIME:	29.06.2008, 08:00 h
NOTE:	Times are UTC (local time = UTC + 3h)

Synopsis

The aircraft took off from Tympaki airport at approx. 07:30 h on the 29.06.2008 intending to drop parachutists, carrying the pilot, a 43 year old male, and four parachutists.

After dropping the parachutists from a height of 10.000 ft, and having received the assurance from the Drop Zone Safety Officer, who was located on the ground in the drop zone area, that all parachutists had landed, the pilot started descending in order to land.

Whilst the aircraft was making a left turn from the base leg towards the final of the runway, at a height of approx. 1.300 ft and at a distance of 2 miles from the threshold of runway 34, the aircraft encountered vigorous shaking and wind shear. At this stage, an engine failure occurred and when the pilot tried to restart the engine, this turned out to be impossible, so the pilot chose the option of ditching the plane.

During the process of ditching it, the aircraft turned around its transverse axis and it overturned, causing serious damage, as half of the compartment for the pilot and passengers sank into the sea.

The Air Accident Investigation and Aviation Safety Board was informed at 09:00 h of the same day; it rendered its Order No. EDAAP/927/30.06.2008 and appointed

Investigators Mr. Christos Bistas, a professional pilot – Investigator and aircraft Engineer and Mr. Roussinos Dionysios, an aircraft engineer – Investigator for the purpose of compiling a draft report regarding this accident, with the aim to submit it to the Board.

1 Factual Information

1.1 History of flight

The aircraft, type Cessna 182 C, owned by the Hungarian company Sky-Car Kft, was given to the Hungarian company Kapos Airport Kft, which entered into a contract with the Pancretios Free Fall Association regarding the usage of this aircraft for the training needs of their parachutists. This Association has obtained a legal permit to operate a school for training parachutists as well as the necessary documentation for the usage of this aircraft and its permanent stationing at Tympaki airport.

On 29.06.2008, at approx. 06:00 h, the pilot (K1) arrived at Tympaki airport in the prefecture of Heraklio, Crete, where he was met by the parachutists and their trainers and they started to prepare the aircraft and their equipment for the training session.

K1 submitted the flight plan to the Tower of Chania Airport by telephone and then conducted an external inspection of the aircraft and the standard pre-flight procedures.

The previous day the aircraft had been supplied with 65 L fuel and 1 L engine oil. The fuel was taken from barrels which were stored in a specifically designed area and the pilot intentionally distributed it unevenly into both fuel tanks (40 litres in the left tank and 25 litres in the right tank).

Four parachutists boarded the aircraft. After starting the engine and before take-off, all necessary checks were conducted and nothing was observed to be out of order.

The aircraft took-off and spiralling up it reached 10.000 ft. At that level the parachutists were dropped and the aircraft remained there and continued to circle until K1 received the confirmation from Drop Zone Safety Officer, the officer responsible for drop safety, that all parachutists had landed and that the runway was available for

landing and then he started to descent. The engine received fuel from both tanks, as the selector of the fuel tanks was set on “Both” position.

During the descent, K1 reduced engine features and kept 1500 – 1800 RPM, a speed of 85 – 90 kt and an intake pressure of 12 – 13 in.

Whilst the aircraft was in the basic leg before the turn to the final of the runway, it encountered vigorous shaking and wind shear. According to the pilot, during the left turn from the basic leg towards the final of the runway 34 a strong wind shear forced him to lose height and then he reacted by adding power to the engine.

The engine responded at once but after 4 – 5 seconds it stopped operating. At that moment the aircraft was at a height of approx. 1.300 ft. K1 tried to restart the engine according to standard loss of engine during flight procedure. He made three attempts to restart, during which he tried the fuel selector both at the right and at the left tank, in which, as he was aware, there was more fuel, then he also tried to activate the auxiliary pump, and all three attempts failed.

Because of low altitude and the large distance to the runway, K1 saw that it was impossible to reach the airport, and so he chose to ditch the plane near the coast. As there were people on one part of the coast, he manoeuvred in the form of an S to reduce altitude and to ditch it on a clear space along the coastline. During the last phase before ditching the aircraft and whilst flying parallel to the coast he unsecured the left door of the aircraft, reduced the descent speed to minimum (40 – 45 kt) and then extended the flaps to their full position, with a ground speed of 22 –25 kt, and selected to touch the water with the aft of the aircraft first and to reach as near as possible to the coast. As soon as the main parts of the landing system touched the water, the aircraft turned around its transverse axis and overturned. After it overturned the left wing and the engine sank into the sea and the right wing stayed almost out of the water because it was touching land. The pilot and passengers department were half sunk into the sea. (photo 1).

Photo 1

K1 found himself inside the water, set all electrical switches off and, as he was not able to release the safety belt, he cut it with a knife and left the aircraft.

A fire brigade vehicle and an ambulance came to the accident site to deal with possible fire or injury and 15 minutes later a helicopter was there to transfer possible injured persons, but this was not necessary.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others	Total
Fatal	-	-	-	-
Serious	-	-	-	-
Light	1	-	-	1
None	-	-	-	-

1.3 Damage to Aircraft

The external optical check reveals that the aircraft suffered serious damage, as described below (photo 2):

- Extended damage to the leading edge and the wing tips of both wings are damaged and deformed.
- Distortion of the propeller.
- Deformation of the propeller's cone and the engine covers.
- Snapping of the antennae of the communication and navigation system.
- Breaking of the windscreen.

The distortion of the propeller, the sinking of the engine and the instrument panel in sea water caused a series of inner damage to the engine, the instruments and other equipment of the aircraft which are not possible to be defined.

Photo 2

1.4 Other damage.

None

1.5 Pilot's information

Pilot: Male, age 43 years old.

License : License of pilot for a private land aircrafts, with Reg. No. 08-4569, issued on 16.04.1991, by C.A.A. in Hungary, and a license of pilot for power glider, issued on 04.06.1987.

Validity: The license of pilot for a private aircraft was renewed on 31.05.2007 and is valid until 02.12.2008 and the license for power glider was renewed on 30.07.2007 and is valid until 19.09.2009.

Skills: Single-engine piston land aircrafts, license given on 16.04.1991 and expiring on 02.12.2008. A license of glider trainer given on 22.04.1988.

Medical Certificate: Class 2, issued on 13.09.2007 and valid until 05.09.2008 with the requirement to use corrective glasses.

Radio License: Reg. No. R/T 08-5426, issued on 24.05.2005.

Flying experience: A total of 2.700:00 h of flying, from which 280:00 h with this type of aircraft and 230:00 h with the same aircraft for parachutists drops. 61:21 h and 121 flights were executed during the last 90 days, 29:22 h and 61 flights during the last month, 03:12 h and 7 flights during the last 7 days and 00:30 h and 1 flight during the last 24 hours.

1.6 Aircraft Information

1.6.1 General

Manufacturer	: CESSNA AIRCRAFT COMPANY USA
Type	: CESSNA 182 C
Serial Number	: 18252912
Year of Manufacture	: 1960
Maximum Take-off Mass	: 1202 kg
Fuel Tank Capacity	: 246 L

The Certificate of Registration with number PM 1006/1/2008 was issued on 05 May 2008 and data HA-SUD.

The Certificate of Airworthiness with number 8076, was issued on 05.05.2008 and was valid until 09.04.2009.

Aircraft Radio License with number E22223-2/2007, was issued 28.06.2007 with date of expiration 31.07.2008. The aircraft was equipped with two radio sets and transponder.

It is suitable for VFR flights, like the specific flight of the accident.

Total hours since manufacture	: 9.874:35 h
Total operation hours since previous inspection	: 74.35 h
Total operation hours since previous 50 hrs. inspection	: 29:03 h

During the accident flight the aircraft carried 65 L of fuel in its tanks, from which 40 L in the left tank and 25 L in the right tank. The supply took place after the end of the flights on the day previous to the accident.

The aircraft's empty weight, with the usage of one seat (for the pilot) is 718.4 kg.

1.6.2 Engine

Manufacturer	: CONTINENTAL
Type	: 0-470-R
Manufacturer's Serial Number	: 462850
Total operation hours since manufacture	: 6.192:25 h
Total operation hours since general inspection	: 1.136:25 h
Horsepower	: 230 HP at 2.600 rmp

1.6.3 1.6.3 Propeller

Manufacturer	: Mc CAULEY
Type	: 2A34C/90A-8
Manufacturer's Serial Number	: 725314

1.6.4 Fuel System

According to the approved operation manual (Airplane and system description, approval number 522658/30.08.2002) the aircraft's fuel system consists of two elastic type tanks located inside the wings. The fuel from the tanks reaches the engine using gravity, through the selector, a metallic filter and the mixer.

A rotating fuel tank selector, with four positions (Left, Both, Right, Off) is located on the floor of the pilot's cabin, at the right side of the seat. According to the manufacturer's instructions normal operation of the system should be done with the selector in the position "Both", where the engine is fuelled by both tanks, for reasons of safety, meaning to prevent possible engine failure due to lack of fuel flow.

The manual for the operation of the fuel system contains a special note to pilots that the tank selector should be in the position “Both” during the phases of take-off, ascent, descent, landing and during manoeuvres in order to avoid the possible selection of an empty tank.

In another note the manufacturer warns that also during the phase of straight, horizontal flight it is possible to have an uneven fuel intake from the tanks when the aircrafts wings are not kept horizontal.

When a fuel tank contains an amount less than ¼ of its capacity, during the phase of prolonged uncoordinated flight such as slips or skids, it is possible that the fuel outlets become exposed, thus causing fuel starvation and engine stoppage.

On the instruments panel in the pilot’s cabin there are two electrical fuel indicators, which receive electrical signals from an fuel quantity transmitter (floating type) about the level of fuel in each of the tanks. When the indicator shows a zero amount of fuel inside a tank there is still 7.5 L which cannot be used due to manufacture. For each tank there is a warning system for low amount of fuel, which is activated when the amount in one of the tanks is reduced below 30 L.

The fuel system also includes a power pump and an auxiliary fuel pump, filters, valves for the draining of the tanks and the circuit, as well as a venting system for the relief of the internal pressure of the tanks. The auxiliary pump is used during the start of the engine. Whilst the engine is running, as long as the power pump is operating, it is not necessary to use the auxiliary pump unless in case of failure of the power pump.

The venting system for restoring internal pressure in the tanks is essential. A possible blockage of the system can cause a decrease of fuel flow to the engine and possible an engine stoppage.

The aircraft and the engine had all necessary additional documentation (STC) (SA2000CE, SE1997CE) which allows the usage of unleaded petrol for cars as an engine fuel. According to the pilot’s testimony the aircraft also received airplane fuel at regular intervals (100LL), which is also mentioned in the above documentation.

1.6.5 Maintenance

The aircraft received regular maintenance work, according to the standard procedures and the manufacturer's maintenance manuals, before the date it was imported into Greece and until the date of the accident.

The standard regular and yearly inspections for the renewal of the Certificate of Airworthiness (CoA) were properly carried out by a maintenance organization, authorized by the Hungarian Civil Aviation Authority (HU 145.070).

The last renewal of the CoA happened on 05.05.2008, after the yearly inspection, with aircraft's operation hours 9.800:00 h and engine hours 6.120:14 h since the date of manufacturing and 1.064:14 h since its general repair service. Amongst other service jobs, the filter and oil of the engine were changed, cylinders No. 4 and 6 of the engine were replaced, the compulsory S/B's & A/D's were applied, and the next inspection for 12 years was set for 04.04.2011.

The last 50-hour inspection was carried out whilst the aircraft was operational in Greece by a Greek certified and authorized engineer on 29.05.2008, with aircraft's operational hours 9.844:32 hrs. During the standard service jobs a problem with the system of the fuel mixture ignition was observed and fixed, the tyres of the landing system were replaced due to wear, and cylinder No. 1 of the engine was replaced.

The aircraft has operated in Greece a total of 37:18 h. According to the data recorded in its logbook, the aircraft has operated a total of 30:03 h between its last inspection and the date of the accident. The recordings of the engine's operation hours and the aircraft's operation hours show a difference of 01:03 hrs.

1.7 Meteorological Information

According to the data submitted by the Hellenic National Meteorological Service, the weather conditions in the area at the time of the accident were the following: wind from 320° with wind speed 15 knots, satisfactory visibility, sunshine, temperature 33°C, dew point 11°C, QNH 1008 hPa.

There is a meteorological information service located at Tympaki airport, where the pilot did not ask to receive the meteorological data.

A windsock is located at the beginning of landline 09.

The aircraft's pilot and the trainers of the parachutist school use a movable instrument to measure wind before flying.

1.8 Aids to Navigation

Not applicable.

1.9 Communications

There are no Air Traffic Control Services at Tympaki airport. During the entire flight, the aircraft's pilot was in constant communication with the Drop Zone Safety Officer on the ground.

Due to the location of the airport and the ground morphology it is impossible to communicate with the Control Towers of the airports in Heraklio and Souda, which can be achieved at altitudes above 5.000 ft.

After the aircraft made an emergency ditching, the Drop Zone Safety Officer informed the Control Tower of the airports in Heraklio and Souda by telephone and reported the accident.

1.10 Aerodrome information

Tympaki airport in the Heraklio Prefecture belongs to the Hellenic Air Forces (138 Flying Squad) and it is also used by the Pancretios Free Fall Association for the development of its air-sport activities regarding parachutists.
The airport data are: reference point 35°04'00'' N and 024°45'00'' E, airport altitude above sea level 7 ft, landing runway direction 09/29 with dimensions 9.000 ft x 160 ft and 16/34 with dimensions 2.700 ft x 160 ft and surfaces covered with asphalt. Alongside the landing strips there are two drop zones. There are windsocks at the beginning of the landing strips.

The air traffic in the airport is controlled by the air traffic control services of the airports in Heraklio and Chania and it is suitable for VFR flights. The airport has an ambulance and a Fire Brigade vehicle and the necessary fire extinguishing equipment class 4.

There is no intense flying activity in this airport; it is rather minimal and mainly relating with dropping parachutists.

1.11 Flight Recorders

There are no FDR and CVR available in the aircraft, as they were not compulsory.

1.12 Wreckage and Impact Information

The aircraft was immobilized at location 35°02’14’’ N, 024°45’23’’ E and at a distance of 2 miles from the threshold of runway 34 (photograph 3).

During the ditching of the aircraft it overturned by turning around its transverse axis, its propeller suffered distortion and both its wings suffered serious damage. The aircraft remained immobilized inside sea water, which covered its engines, the instrument panel and the passenger compartment, without any further debris.

Photo 3

1.13 Medical and Pathological Information

Not applicable.

1.14 Fire

No fire.

1.15 Survival Aspects

The pilot found himself inside the water, unable to release his safety belt, which he cut with a knife he was carrying.

He did the necessary actions and followed standard procedures and placed the electrical switches in the "Off" position, but not the fuel tank selector, and then he left the aircraft. A fire brigade vehicle and an ambulance came to the accident site to deal with a possible fire or injury and also other people present in the area, but their intervention was not necessary.

A helicopter of Hellenic Air Forces came on site 20 minutes later to transfer possible injured persons, but this was not necessary. The pilot was taken to the nearest Health Center as a precaution, where he was diagnosed to have suffered small abrasions to his shoulder and knee and then he was returned to the accident site, where he was asked to turn off the fuel tank selector in order to prevent leakage.

1.16 Tests and Research

It was not possible to investigate the aircraft's engine, the fuelling system and the instruments because the aircraft had sunk and remained inside sea water and sand had deposited on the engine and instruments. Despite its turning over and remaining upside down for a considerable time, a check done on the fuel tanks revealed 30 litres of fuel in the left tank and the right tank being empty.

1.17 Organizational and Management Information

The "Pancretios Free Fall Association" is a non-profitable organization, established in 2005, with registration number 2052 and decision number issued by the Court of First Instance 828/3375/1004/2005, with its base at the Tympaki Municipality of the Heraklio Prefecture in the island of Crete.

The Association's aims are to promote air sports, to train parachutists, to maintain the flying activity of graduate parachutists and their participation in airsport games.

This Airsport Association is managed by a five-member Board of Directors and is a member of the Hellenic Air Sports Federation (HASF), with registration number ELAO/217.

The Association's activities are carried out in accordance with the published Regulations for the School of Amateur Parachutists (Gov. Gazette B/1347/ 07.11.2000) and the Manual for the Operation and Administration of a Parachute School.

The Association obtained the required approval for a Parachute School from the HASF, in cooperation with the Hellenic Civil Aviation Authority according to document 107/ 29.05.2008.

For the development of the Association's activities the Mutual Fund of the Air Force has given it a hangar with its auxiliary facilities and two teaching rooms, located inside Tympaki airport, as well as the usage of the airport's landing strip for take-off and landing, according to documents F560/AD 673579/ S120/ 16.04.2007.

The Association has located all its activities in the above facilities, which are the hangar for the aircraft and the parachutes, a teaching room, a storehouse for material and equipment, secretarial support, hygiene facilities, common usage space and fuel tanks.

1.18 Additional Information

For the development of its activities, the Association has signed a contract with the Hungarian company Sky-Car Kft regarding cooperation and usage of the aircraft HA-SUD, with a pilot with a license for private aircrafts, issued by the Hungarian Civil Aviation. The aircraft was owned by the Hungarian company Kapos Airport Kft, which leased it to Sky-Car Kft.

The Hellenic Air Force has issued a license for the operational usage of this aircraft at Tympaki airport, on 06.06.2008.

The Hellenic Civil Aviation Authority has received, through the Hellenic Air Sports Federation, all relevant documents regarding the aircraft's airworthiness, the contract for its usage, the pilot's licenses, the insurance contract for the pilot and the passenger parachutists, which were accepted and were used as documentation for the issuing of the relevant school license.

In cooperation with the Hellenic Air Force, the Hellenic Civil Aviation Authority issued the relevant announcement for flying activities for the specific dates and hours in the region on 06.06.2008.

In coordination with the Drop Zone Safety Officer the pilot of the aircraft had submitted the relevant Flight Plans for seven flights on the same date, mentioning the airports of Chania and Heraklio, the number of passengers and the times of the flights. This was the first flight of the day.

1.19 Useful or Effective Investigation Techniques

Not applicable.

2 ANALYSIS

2.1 General

The aircraft was used by the Pancretios Free Fall Association according to the terms of the leasing contract for the purpose of training parachutists. The Association had performed all necessary actions for the issue of a license to use the airport and the aircraft.

In accordance with the Regulations for the School of Amateur Parachutists (Gov. Gazette B/1347/07.11.2000), it is permitted for the school to use a suitable leased aircraft (Chapter B, paragraph 7).

The aircraft was suitably equipped and certified for parachute drops. It was insured for the pilot and three passengers and also for damage to third parties. During the specific flight of the accident, the aircraft took off with four parachutists as passengers plus the pilot.

The pilot had a valid license to fly private aircrafts and a health certificate and complied with the requirements of the above mentioned regulations ((Chapter B, paragraph 5(c)).

Despite the above, according to document RB569/1/2008/10.09.08, issued by the Hungarian Civil Aviation, this specific pilot was not authorized to perform any commercial air jobs, because of Hungarian Air Law No. 1995 XCVII par.67. Based

on this limitation the Hungarian Aviation Service started procedures for the suspension of the pilot's license after the accident.

The aircraft and the engine had all necessary additional documentation (STC) (SA2000CE, SE1997CE) which allows the usage of unleaded petrol for cars as an engine fuel. According to the pilot's testimony, the aircraft also received airplane fuel at regular intervals (100LL), which is also mentioned in the above documentation.

2.2 The Flight

Before the flight with the accident, the aircraft was supplied with 65 l fuel, 40 litres in the left tank and 25 litres in the right tank. The distribution of the fuel was uneven, according to the pilot's testimony, for reasons of balance considering the fact that the parachutists jump from the aircraft's right side. The above quantity and its distribution were confirmed by the pilot visually and by using a dipstick to measure fuel levels. During the pre-flight check, the fuel was inspected for water and foreign particles and it was clear.

Four parachutists and the pilot went on board the aircraft. Taking into account that the maximum take-off weight was 1.202 kg, and the aircraft with its equipment (only the pilot's seat) weighing 718,4 kg, the weight it was allowed to take as load was 483,6 kg. By estimating the weight of 5 persons, including equipment, at 425 kg (5x85), the aircraft could be supplied with 58,6 kg or 81,4 L fuel.

According to the manufacturer, the fuel consumption for take-off to a height of 10.000 ft is estimated at 11,5 L and for a flight of approx. 15 minutes at this height at 11 L. In total the fuel consumption for the start, the engine test, the ascent, the horizontal flight, the drop of the parachutists and the descent, taking into account the weight of the persons on board and the high temperature at that time, is estimated at approx. 30 L.

According to the pilot's statement, by placing the fuel selector in the position "Both", the engine is supplied with fuel from both tanks. Theoretically, it should consume a quantity of fuel 15 L from the left and 15 L from the right tank.

At take-off, the right tank had 25 L fuel, from which 15 L were consumed and 7.5 L were not usable, and therefore during the descent the right tank was almost empty and the left tank should have approx. 25 L, which is about the quantity of fuel found in the left tank after the accident. The above suggests that the pilot was not concerned with the management of the fuel, thus he left the right tank empty and did not use the extra fuel in the left tank.

During the left turn from the main phase towards the final straight for landing, when the aircraft encountered the shaking and the strong wind shear mentioned by the pilot, causing loss of altitude, the fuel outlet of the left tank, which was the only one supplying the aircraft, was possibly exposed because the fuel level had gone under 30 L, which would then cause the engine to stop working. Besides, this is also mentioned in the aircraft's operation manual, which reminds pilots that when the fuel quantity in the tanks is less than ¼ of their capacity, and the aircraft encounters a prolonged uncoordinated flight such as slips and skids, it is possible that the fuel outlet will become exposed and this will cause interruption of the fuel supply and then engine failure.

The attempts to restart the engine possibly failed because of the conditions after it stalled; that is a high internal temperature of the engine within a colder external environment without a continuous fuel flow, in combination with lack of time, which could allow to restore the re-start possibility.

Regarding the shaking mentioned by the pilot that he encountered during the final phase, the wind data received by the Hellenic National Meteorological Service do not show any turbulence or wind shear at the time of the accident; but the shaking could have been caused by the ground's morphology, which is the existence of a hill at a distance of 3,5 km from the beginning of landing strip 34, in combination with the direction of the existing wind.

3 CONCLUSIONS

3.1 Findings

3.1.1 The aircraft owned by the company Kapos Airport Kft was leased to the company Sky Car Kft, which then leased it to the Pancretios Free Fall Association for parachute drops.

3.1.2 The aircraft belongs to Class "B", Group (a) Regular Airplane, suitable for purposes of General Aviation, suitably formed and authorized for parachute drops.

3.1.3 The Certificate of Registration with number PM 1006/1/2008 was issued by the Hungarian Civil Aviation Authority on 05.05.2008.

3.1.4 The Certificate of Airworthiness, with number 8076, was issued on 05.05.2008 and was valid until 09.04.2009.

3.1.5 The Aircraft Radio License, with number E22223-2/2007, was issued on 28.06.2007 and was valid until 31.07.2008. The aircraft is also supplied with two wireless sets and one Transponder.

3.1.6 The aircraft underwent regular maintenance, in accordance with the manufacturer's maintenance manuals.

3.1.7 The balance check document was not delivered, thus it is impossible to determine whether and when this balance check was carried out.

3.1.8 The aircraft and the engine had all necessary additional documentation (STC) (SA2000CE, SE1997CE) which allows the usage of MOGAS.

3.1.9 The aircraft was insured for damage to third parties, the pilot and three passengers from 01.04.2008 until 31.03.2009 by Allianz Insurance Company under insurance contract 138.529. There were four parachutists on board before the aircraft's accident.

3.1.10 K1 had a valid license for flying private aircrafts and a Medical Certificate. He was not authorized to perform commercial aviation jobs according to Hungarian Law No. 1995 XCVII paragraph 67.

3.1.11 The aircraft was supplied with 65 L of fuel which was not evenly distributed in the tanks, the result of which was that when the aircraft turned left and it encountered turbulences, its right fuel tank was empty and its left fuel tank contained approx. 30 L.

3.1.12 With the right fuel tank empty and the left tank with a fuel approx. 30 L, most likely what happened was that the fuel supply to the engine stopped and that the engine failed. This is also mentioned in the aircraft's operation manual, which reminds pilots that when the fuel quantity in the tanks is less than ¼ of their capacity and the aircraft encounters a prolonged uncoordinated flight such as slips and skids, it is possible that the fuel outlet will become exposed and this will cause interruption of the fuel supply and then engine failure.

3.1.13 The attempts to restart the engine possibly failed because of the conditions after it stalled; that is a high internal temperature of the engine within a colder external environment without a continuous fuel flow, in combination with lack of time, which could allow to restore the re-start possibility.

3.2 Possible Causes

An uneven filling of the fuel tanks with a limited amount of fuel and its improper usage resulted in the ceasing of the fuelling of the engine when the aircraft encountered turbulence during a left turn.

Hellenikon, 11 November 2009

THE CHAIRMAN

Akrivos Tsolakis

THE MEMBERS

G. Kyriakopoulos
H. Nikolaides
G. Stylios
Tr. Tsitinides

Exact copy[1]
The Secretary

J. Papadopoulos

[1] **Note:**
This report has been translated and published by the Hellenic Air Accident Investigation and Aviation Safety Board. As accurate as the translation may be, the original text in Greece should be considered as the work of reference.