SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Occurrence Investigation** Form Number: CA 12-12a

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9018		
Aircraft Registration	ZU-EUZ	**Date of Accident**	14 March 2012		**Time of Accident**	1215Z	
Type of Aircraft	Icarus C42		**Type of Operation**		Private		
Pilot-in-command Licence Type	Commercial Pilot		**Age**	21	**Licence Valid**	Yes	
Pilot-in-command Flying Experience	Total Flying Hours		242.4		Hours on Type	87.2	
Last point of departure	Louis Trichardt aerodrome (Limpopo)						
Next point of intended landing	Kitty Hawk aerodrome Gauteng						
Location of accident site with reference to easily defined geographical points (GPS readings if possible)							
On open rocky terrain near Bronkhorstspruit dam (GPS position: 25º 53'21.8" E028º 44'09.8").							
Meteorological Information	Weather conditions: CAVOK.						
Number of people on board	1 + 0	**No. of people injured**	1		**No. of people killed**	0	

Synopsis

On 14 March 2012 at approximately 1015Z, the commercial pilot being the sole occupant on board the aircraft, departed from Dendron aerodrome (FADO) on a ferry (repositioning) flight from Dendron aerodrome to Kitty Hawk The flight towards Kitty Hawk was uneventful and the pilot deviated from his original flight plan and route towards Bronkhorstspruit dam.

The pilot concluded that he intended to fly overhead his friend's house at the dam although he was not authorized to do so. He then selected 2 notches of flap in order to decrease the aircraft stall speed and flew twice over the hill where his friend stayed at approximately 100ft AGL and then commenced with a left hand turn in order to route back to Kitty Hawk. However, as he tightened the turn with the aircraft in a steep left hand bank angle to have a lookout for a radio mast on the hill, he completely lost situational awareness. The aircraft stalled due to a low airspeed with the aircraft nose in a high nose up attitude, causing the sink rate to increase. As the nose of the aircraft dropped during the stall, he selected full power. The aircraft airspeed eventually increased, but as he started to ease out of the dive, the aircraft was too low above the ground to prevent the aircraft from impacting the ground.

The aircraft was extensively damaged during the ground impact. The pilot sustained minor injuries to his shoulder and was admitted at hospital under observation and discharged after 2 days.

Probable Cause

The pilot overbanked the aircraft during an attempt to avoid collision with the radio mast resulting in a Stall which he could not recover from.

Contributory Factor
The pilot disregarded the safety standards by flying at low altitude.

IARC Date		Release Date	

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Spatial Intelligence Ltd
Manufacturer : Combo Ikarus GMBH
Model : Ikarus C42
Nationality : South African
Registration Marks : ZU-EUZ
Place : Bronkhorstspruit Dam
Date : 14 March 2012
Time : 1215Z

All times given in this report are Co-ordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose of the Investigation :

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (1997) this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and ***not to establish legal liability****.*

Disclaimer:

This report is given without prejudice to the rights of the CAA, which are reserved.

1. FACTUAL INFORMATION

1.1 History of Flight

1.1.1 On 14 March 2012 at approximately 1015Z, the commercial pilot being the sole occupant on board the aircraft, departed from Dendron aerodrome (FADO) on a ferry (repositioning) flight from Dendron aerodrome to Kitty Hawk aerodrome**.**

1.1.2 The pilot stated that the flight towards Kitty Hawk was uneventful. However, upon entering the Pretoria General Flying Area (GFA), he climbed to 5500ft AGL, non-standard and deviated from his original flight plan in order to route towards Bronkhorstspruit dam.

1.1.3 The pilot concluded that he intended to fly overhead his friend's house at the dam although he was not authorized to do so. He reported his height, position, intention and routing in the general flying area on frequency 124.4 MHz and reported that he was routing via Bronkhorstspruit to Kitty Hawk aerodrome. He called outbound on frequency 124.4 MHz to the south east of the GFA and switched over to the JHB special flight rules east on frequency 125.4 MHz and reported his intentions.

1.1.4 He then selected 2 notches of flap in order to decrease the aircraft stall speed and flew twice over the hill at approximately 100ft AGL where his friend stayed. He then commenced with a left hand turn in order to route back to Kitty Hawk. However, as he tightened the turn with the aircraft in a steep left hand bank angle to have a lookout for a radio mast on the hill, he completely lost situational awareness. At that stage, the aircraft stalled due to a low airspeed with the aircraft nose in a high nose up attitude, causing the sink rate to increase. As the nose of the aircraft dropped during the stall, he selected full power with the control column centrally forward. The aircraft

airspeed eventually increased, but as he started to ease out of the dive, the aircraft was too low above the ground to prevent the aircraft from impacting the ground surface.

1.1.5 The aircraft wings, fuselage and nose section were extensively damaged during the ground impact.

1.1.6 The pilot sustained minor injuries to his left shoulder and was admitted at hospital under observation and discharged after 2 days.

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	1	-	-	-
None	-	-	-	-

1.3 Damage to Aircraft

1.3.1 The aircraft wings nose section and fuselage was extensively damaged during the ground impact sequence.

1.4 Other Damage

1.4.1 There was no other damage sustained in the accident.

1.5 Personnel Information

1.5.1 Pilot-in-command:

Nationality	South African	Gender	Male	Age	21
Licence Number	0272358912	Licence Type	Commercial Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Flight tests-multi & single engine flight tests; night rating				
Medical Expiry Date	18 October 2012.				
Restrictions	None				
Previous Accidents	None.				

1.5.2 Flying Experience:

Total Hours	242.4
Total Past 90 Days	85.7
Total on Type Past 90 Days	85.7
Total on Type	87.2

1.6 Aircraft Information

1.6.1 Airframe:

Type	Ikarus C42	
Serial No.	0710-6918	
Manufacturer	Comco	
Date of Manufacture	2008	
Total Airframe Hours (At time of accident)	2083.6	
Last Annual Inspection (Hours & Date)	2028.3	05 March 2012
Hours since Last Annual Inspection	55.3	
Authority to Fly (Issue Date)	18 January 2012	
Authority to Fly (Expiry Date)	12 January 2013	
C of R (Issue Date) (Present owner)	06 February 2008	
Operating Categories	Commercial	

1.6.2 Engine:

Type	Rotax 912 ULS
Serial No.	6776200
Hours since New	348.0
Hours since Overhaul	Not yet reached

1.6.3 Propeller:

Type	KIEF 3 Blade ground adjustable
Serial No.	283627
Hours since New	309.9
Hours since Overhaul	Not yet reached

1.6.4 The aircraft was maintained by an approved Aircraft Maintenance Organisation (AMO 844). The last Mandatory Periodic Inspection (MPI) was certified on 05 March 2012 at a total of 2028.3 hours airframe hours.

1.6.6 The authority to fly for the aircraft was issued on 18 January 2012 and was valid until 12 January 2013.

1.6.7 Aircraft Maintenance :

a) According to the aircraft maintenance records, the last Annual Inspection was certified by an AMO. The aircraft operated without any defect and/or malfunction at the time of the accident.

1.6.8 Pre-Flight Inspection:
According to the pilot, he performed a pre-flight inspection on the aircraft prior to the flight. There were no defects or malfunction identified on the aircraft.

1.6.9 Fuel Status:
The aircraft was refuelled to a capacity of 70 litres and 40 litres still remained in the fuel tank at the time when the accident occurred.

1.7 Meteorological Information

1.7.1 The weather information from pilot questionnaire.

Wind direction	Calm	Wind speed	Calm	Visibility	CAVOK
Temperature	18˚C	Cloud cover	Nil	Cloud base	Nil
Dew point	N/A				

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigation equipment, approved for the aircraft type. The pilot reported that all the navigation equipment was in a serviceable condition at the time of the accident.

1.9 Communications.

1.9.1 The pilot did not report any defect or malfunction with the radio equipment. The radio equipment of the aircraft was serviceable during the flight and at the time of the accident.

1.10 Aerodrome Information

1.10.1 The aircraft was involved in the accident outside the boundaries of an aerodrome.

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with a flight data recorder (FDR) and cockpit voice recorders (CVR), nor was it required by regulation.

1.12 Wreckage and Impact Information

1.12.1 The aircraft stalled with the aircraft in a steep left hand turn and nose up attitude. The pilot attempted to keep the nose of the aircraft as high as possible to prevent the aircraft from flying straight into the ground. The aircraft impacted the ground, causing substantial damage to the wings, fuselage and lower nose section.

1.13 Medical and Pathological Information

1.13.1 The pilot sustained minor injuries to his left shoulder and was admitted to hospital under observation for 2 days.

1.14 Fire

1.14.1 There was no evidence of a pre or post-impact fire.

1.15 Survival Aspects

1.15.1 The accident was considered to be survivable as the pilot was properly restrained by the safety harnesses installed on the aircraft and the fact that the aircraft impacted the terrain at low speed. The cockpit area remained fairly intact that prevented the pilot to sustain serious injuries.

1.16 Tests and Research.

1.16.1 Not considered necessary.

1.17 Organizational and Management Information

1.17.1 The commercial pilot flew the aircraft on a ferry (repositioning) flight.

1.17.2 The aircraft was maintained by an approved AMO 844. The last Mandatory Periodic Inspection (MPI) was certified on 05 March 2012 at a total of 2028.3 hours airframe hours.

1.17.3 The flight was conducted under provision of Part 96 of the Civil Aviation Regulations of 1997 as amended. The operator was in possession of a valid air operating certificate (AOC) No: F05924 and air service licence G903D that was issued on 29 November 2011 and valid until 06 December 2012.

1.18 Additional Information

1.18.1 Minimum Heights: According to Civil Aviation Regulations Part 91.06.32,

a) No aircraft shall be flown over built-up areas or over an open-air assembly of persons at a height less than 1000ft above the highest obstacle, within a radius of 2000ft from the aircraft;
b) when flown elsewhere, than specified in paragraph (a), shall be flown at a height less than 500ft above the ground or water, unless the flight can be made without hazard or nuisance to persons or property on the ground or water and,
c) shall circle over or do repeated overflights over an open-air assembly of persons at a height less than 3000ft above the surface.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1.1 After the pilot executed some low flying over a hill at approximately 100ft AGL, he commenced with a left hand turn in order to route back to his final destination However, as he tightened the turn with the aircraft in a steep left hand bank angle to have a lookout for a radio mast on the hill, he became disorientated. The aircraft stalled due to a low airspeed with the aircraft nose in a high nose up attitude, causing the sink rate to increase. As the nose of the aircraft dropped during the stall, he selected full power with the control column centrally forward. The aircraft airspeed increased, but the aircraft was too low above the ground to recover causing the aircraft to impact the ground surface.

2.1.2 The aircraft was extensively damaged during the ground impact.

3. CONCLUSION

3.1 Findings

3.1.1 The pilot was properly licensed and type-rated to conduct the ferry flight.

3.1.2 The pilot was the holder of a valid aviation medical certificate issued by a CAA-approved medical examiner.

3.1.3 After the pilot executed low flying of approximately 100ft AGL over a hill, he became disorientated during a sharp turn. The aircraft stalled and the aircraft was too low above the terrain to recover from the stall.

3.1.3 He disregarded the safety standards by flying at low altitude.

3.1.4 The aircraft was extensively damaged on impact with the rocky terrain.

3.1.5 The pilot sustained minor injuries to his left shoulder and was admitted to hospital under observation for two days.

3.1.6 The Authority to fly for the aircraft was valid at the time of the accident

3.2 Probable Cause/s

3.2.1 The pilot overbanked the aircraft during an attempt to avoid collision with the radio mast resulting in a stall which he could not recover from.

Contributory factor
The pilot disregarded the safety standards by flying at low altitude.

4. SAFETY RECOMMENDATIONS

4. 1 None.

5. APPENDICES

5. 1 None

Compiled by:

..... Date: ……..
For: Director of Civil Aviation

Investigator-in-charge : ……. Date: ……..

Co-Investigator : ……. Date: ……..