

**AAIPU# A13-05210**



**BAID**

**Bahamas  
Accident  
Investigation  
Department**

**NASSAU, N. P., BAHAMAS**

**AIRCRAFT ACCIDENT REPORT  
AIRCRAFT STALLED AND SPUN – LOSS OF CONTROL**

**FIRST CLASS FLYERS LLC  
CIRRUS AIRCRAFT SR22**

**N432BC**

**FREEPORT, GRAND BAHAMA, BAHAMAS**

**NOVEMBER 10, 2013**





**Bahamas Department of Civil Aviation  
Air Accident Investigation and Prevention Unit  
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Nassau N. P., Bahamas**

## **AIRCRAFT ACCIDENT *REPORT***



**STALL / SPIN AND LOSS OF CONTROL  
FIRST CLASS FLYERS LLC  
CIRRUS AIRCRAFT  
SR22, N432BC**

**FREEPORT, GRAND BAHAMA, BAHAMAS  
NOVEMBER 10, 2013**

**Abstract:**

This report outlines the circumstances involving the accident of a Cirrus Design Corporation aircraft. The aircraft with registration N432BC was a model SR22, serial number 1193 that was involved in a fatal accident on Freeport, Grand Bahama, Bahamas on November 10, 2013. The aircraft entered an unrecoverable spin and resulted in four (4) fatalities.



## **Bahamas Department of Civil Aviation Air Accident Investigation and Prevention Unit**

The Air Accident Investigation and Prevention Unit (AAIPU) is the accident investigation unit of the Bahamas Civil Aviation Department (BCAD).

The AAIPU's function is to promote and improve safety and public confidence in the aviation industry through excellence in:

- Independent investigation of aviation accidents and other safety occurrences
- Safety data recording, analysis and research
- Fostering safety awareness, knowledge and action.

**The AAIPU does not investigate for the purpose of apportioning blame or to provide a means for determining liability.**

The AAIPU performs its functions in accordance with the provisions of the *Bahamas Civil Aviation (Safety) (Amendment) Regulations (BASR 2013)*, *Schedule 19, International Civil Aviation Organization (ICAO) Annex 13* and, where applicable, relevant international agreements.

The Civil Aviation Department is mandated by the Ministry of Transportation and Aviation to investigate air transportation accidents and incidents, determine probable causes of accidents and incidents, issue safety recommendations, study transportation safety issues and evaluate the safety effectiveness of agencies and stakeholders involved in air transportation.

The AAIPU makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations and safety alerts. When the AAIPU issues a safety recommendation, the person, organization or agency must provide a written response within 90 days. That response must indicate whether the person, organization or agency accepts the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

Official Copies of accident reports can be obtained by contacting:

**Mr. Ivan Cleare**  
**Director (Acting)**  
**Bahamas Department of Civil Aviation**  
**JL Center, Blake Road**  
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## ABBREVIATIONS AND TERMINOLOGY

*When the following terms are used in this report, they have the following meanings:*

AAIPU	Air Accident Investigation and Prevention Unit	FAA	Federal Aviation Administration
ATS	Air Traffic Services	ICAO	International Civil Aviation Organization
BDCA	/CAD Bahamas Department of Civil Aviation	MET	Meteorological Office / Department
CAPS	Cirrus Aircraft Parachute System	METAR	Weather Report furnished by Meteorological Department
CASR	Bahamas Civil Aviation (Safety) Regulations	NM or nm	Nautical Miles
CFIT	Controlled Flight into Terrain	NTSB	National Transportation Safety Board
C of A	Certificate of Airworthiness	NVM	Non Volatile Memory
C of R	Certificate of Registration	USA	United States of America
CVR	Cockpit Voice Recorder	VFR	Visual Flight Rules
DCA	Director of Civil Aviation	UTC / Z	Universal Coordinated Time / Zulu time
EST	Eastern Standard Time (-4 hours to convert from UTC)		

## DEFINITIONS

When the following terms are used in the Standards and Recommended Practices for Aircraft Accident and Incident Investigation, they have the following meaning:

**Accident** - An occurrence associated with the operation of an aircraft which takes place between the times any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

a) a person is fatally or seriously injured as a result of:

- being in the aircraft, or
- direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
- direct exposure to jet blast, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

b) the aircraft sustains damage or structural failure which:

- adversely affects the structural strength, performance or flight characteristics of the aircraft, and
- would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas,

tires, brakes, fairings, small dents or puncture holes in the aircraft skin; or

c) the aircraft is missing or is completely inaccessible.

Note 1.— For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified as a fatal injury by ICAO.

Note 2.— An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.

**Accredited representative** - A person designated by a State, on the basis of his or her qualifications, for the purpose of participating in an investigation conducted by another State.

**Adviser** - A person appointed by a State, on the basis of his or her qualifications, for the purpose of assisting its accredited representative in an investigation.

**Aircraft** - Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

**Causes** - Actions, omissions, events, conditions, or a combination thereof, which led to the accident or incident.

**CFIT** - Controlled Flight into Terrain occurs when an airworthy aircraft under the complete control of the pilot is inadvertently flown into terrain, water, or an obstacle. The pilots are generally unaware of the danger until it is too late.

**Fatal injury** - means any injury which results in death within 30 days of the accident.

**Flight recorder** - Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

**Investigation** - A process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and, when appropriate, the making of safety recommendations.

**Investigator-in-charge** - A person charged, on the basis of his or her qualifications, with the responsibility for the organization, conduct and control of an investigation.

Note.— Nothing in the above definition is intended to preclude the functions of an investigator-in-charge being assigned to a commission or other body.

**Maximum mass** - Maximum certificated take-off mass.

**Operator** - A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

**Preliminary Report.** The communication used for the prompt dissemination of data obtained during the early stages of the investigation.

**Safety Recommendation.** A proposal of the accident investigation authority of the State conducting the investigation, based on information derived from the investigation, made with the intention of preventing accidents or incidents.

**State of Design** - The State having jurisdiction over the organization responsible for the type design.

**State of Manufacture** - The State having jurisdiction over the organization responsible for the final assembly of the aircraft.

**State of Occurrence** - The State in the territory of which an accident or incident occurs.

**State of the Operator** - The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

**State of Registry** - The State on whose register the aircraft is entered.

Note: - In the case of the registration of aircraft of an International operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International.

**FOREWORD**

July 7, 2015

Mr. Ivan Cleare  
Acting Director  
Bahamas Civil Aviation Department  
P.O. Box N-975  
Nassau, N.P.,  
Bahamas

Sir

The AAIPU is duty-bound to submit this report on the circumstances of the accident involving N432BC, a Cirrus Aircraft, SR-22, registered in the United States to First Class Flyers LLC. This accident occurred while conducting a local flight around the island of Grand Bahama on November 10, 2013 at approximately 10:57am local (1557 UTC).

This report is submitted pursuant to Part XII, Regulation 80, and Schedule 19 of the Bahamas Civil Aviation (Safety)(Amendment) Regulation (BASR 2013) and in accordance with Annex 13 to the Convention on International Civil Aviation Organization (ICAO).

In accordance with Annex 13 to the Convention on International Civil Aviation (ICAO), and Schedule 19 of the Bahamas Civil Aviation (Safety)(Amendment) Regulations (BASR), the fundamental purpose of such investigations is to determine the circumstances and causes of these events, with a view to the preservation of life and the avoidance of similar occurrences in the future. It is not the purpose of such investigations to apportion blame or liability.

This report contains facts, which have been determined up to the time of publication. Information is published to inform the aviation industry and the public of the circumstances surrounding this accident. The contents of this report may be subjected to alterations or corrections if additional factual information becomes available.

Regards,



Mr. Delvin Major  
Investigator in Charge  
Bahamas Civil Aviation Authority  
Accident Investigation Department  
JL Center, Blake Road  
Nassau, N. P., Bahamas



**BAHAMAS  
CIVIL AVIATION DEPARTMENT  
AIR ACCIDENT INVESTIGATION  
AND PREVENTION UNIT**

**TITLE**

**Registered Owner:** First Class Flyers LLC

**Operator:** Private Operator

**Manufacturer:** Cirrus Aircraft Corporation

**Aircraft Type:** SR22

**Nationality:** United States

**Registration:** N432BC

**Place of Accident:** Freeport Grand Bahama, Bahamas

**Date and Time:** November 10, 2013 at 1557 UTC (10:57am EST)

**Notification:** DCA, NTSB, FAA, CIRRUS, CMI, USA Embassy, ICAO

**Investigating Authority:** Civil Aviation Department Air Accident Investigation and Prevention Unit

**Investigator in Charge:** Mr. Delvin Major

**Accredited Representatives:** Mr. Eric Alleyne NTSB, USA

**Technical Advisors:** Mr. Brannon Mayer - Cirrus Aircraft Corporation  
Mr. Philip Grice - Continental Motors Inc.  
Mr. Kurt Gibson – Continental Motors Inc.

**Releasing Authority:** Director of Civil Aviation Department, Nassau, N. P., Bahamas

**Date of Final Report Publication: July 7, 2015**

## FACTUAL INFORMATION

### 1.1 HISTORY OF THE FLIGHT

On Sunday November 10, 2013, at approximately 10:56 am local EST (1556UTC), a fixed wing single engine, Cirrus 22 aircraft, N432BC crashed shortly after takeoff from Grand Bahama International Airport. This was the second flight for the aircraft as it was conducting sightseeing tours. There were a total of four (4) persons on board at the time of the crash.

The aircraft departed Runway 06 at 10:52am EST (1552UTC) with instructions to turn left after takeoff on course to the northwest, as he had planned. This flight was planned for a local sightseeing trip.

According to reports from the Air Traffic Control Tower (ATC) at Freeport, after takeoff the aircraft proceeded in a northwesterly direction towards West End Grand Bahama. Approximately 3 minutes after departure, the PIC was advised to report when he was eastbound from the west. Shortly after receiving this instruction, the tower reported hearing the pilot exclaim, "Oh shit, oh shit." Several unsuccessful attempts were made to establish communication with the aircraft.

After looking in the direction of where the aircraft was directed to proceed, ATC controller on duty made visual contact of what appeared to be an aircraft in the shallow waters approximately 5 miles from the tower. An aircraft departing Freeport shortly after the doomed aircraft was asked to overfly the area to verify that it was the previous aircraft that had in fact crashed. Unfortunately, the aircraft confirmed that the aircraft had in fact crashed and there were no movements in the area of the crash site.

The accident site was located approximately 5 miles north of Grand Bahama Island, in a tidal region with water depths ranging from a low tide of 3 feet to a high tide of 5 feet.

Emergency entities including the Bahamas Air and Sea Rescue Association (BASRA), Crash Fire Rescue, the Royal Bahamas Police Force (RBPF) and the Royal Bahamas Defense Force (RBDF) were notified. Initially, the aircraft was not accessible via boat due to low water levels. Rescue persons had to walk in the low waters to the aircraft to render assistance.

When the first responders arrived at the scene, they discovered the aircraft destroyed as a result of the impact forces and all occupants fatally injured. All occupants were USA citizens.

There were no witnesses to the accident.

The weather in the area of the crash site at the time of the accident was reported as Visual Meteorological Conditions (VMC).

### 1.2 INJURIES TO PERSONS

Injuries	Crew	Passengers	Total in the aircraft
Fatal	1	3	4
Serious			
Minor			
None			
TOTAL	1	3	4

### 1.3 DAMAGE TO AIRCRAFT

The aircraft was substantially damaged as a result of this occurrence.

### 1.4 OTHER DAMAGE

There were no reports of any significant environmental damage or damage to any objects other than the aircraft.

### 1.5 PERSONNEL INFORMATION

The pilot in command of the fatal aircraft N432BC was a 59 years old male. He held a valid United States Private Pilot License (PPL). The PPL ratings included Airplane: Single engine land. The total hours flying experience up to the time of the accident is unknown. The hours flown in the last 24 hours, 7 days and 90 days prior to the accident are also unknown. The pilot in command held a valid Third Class Medical Certificate.

### 1.6 AIRCRAFT INFORMATION

The aircraft N432BC, a US registered aircraft, was manufactured by Cirrus Design Corporation. The aircraft a model SR22 fixed wing single engine, four-place type was manufactured in 2004. The serial number was 1193 and was registered to First Flyers LLC, 365 Morse Landing Dr., Cicero, IN 46034.

The aircraft was fitted with an IO-550-N27 reciprocating engine, manufactured by Teledyne Continental Motors Inc., and a constant speed three-blade Hartzell PHC-J3YF-1RF propeller.

N432BC, received its standard airworthiness certificate on November 23, 2004. The airplane was

equipped with: Avidyne PFD, MFD, EMAX, Dual Garmin 430's, S-TEC 55X.

## 1.7 METEOROLOGICAL INFORMATION

The Bahamas Department of Meteorology provided the Bahamas Area Forecast valid for the period and area under investigation:

**Special Features:** A weak cold front extends across the Northwest Bahamas from 27 degrees North and 57 degrees west to 25 degrees North and 65 degrees west to 25 degrees North and 84 degrees west.

**Significant Weather:** Over the Northwest Bahamas, few to scattered CB/TCU between 1,800 feet and 2,000 feet with scattered to broken clouds between 4,000 feet and 6,000 feet.

Widely scattered showers with the chance of isolated thundershowers were expected.

Towering cumulous and cumulonimbus clouds with tops above 18,000 feet and 25,000 feet respectively were also expected.

Ceiling and visibility were expected to be reduced below 1,800 feet and 3 nautical miles respectively in showers and thundershowers.

However, at the time of the crash the weather in the area was visual meteorological conditions (VMC). There is no report that the pilot in command obtained a weather briefing prior to departure.

## 1.8 AIDS TO NAVIGATION

At the time of the accident the aircraft had available to it Freeport VHF Omni-directional Range station (VOR) on frequency 113.2 MHz. No discrepancies with the navigational aids were known or reported.

## 1.9 COMMUNICATIONS

The communication facility available to the PIC of N432BC was the Freeport Air Traffic Control Tower. Based on transcript received, the PIC contacted Freeport Ground Control for taxi instructions to Runway 06. Upon reaching the runway he was transferred to Freeport Tower Control frequency 118.5MHz. Once the PIC advised he was ready for takeoff, he was given clearance.

## 1.10 AERODROME INFORMATION

Grand Bahama International Airport (ICAO: MYGF, IATA: FPO) is a privately owned airport in Freeport, Grand Bahama. It is one of two airports in

the Bahamas that has US Boarder Preclearance Facilities. The airport is located at co-ordinates 26°33'31.27"N and 078°41'43.99"W midpoint of Runway 06/24 and is elevated at 7 feet above main sea level. The asphalt prepared runway 06/24 is 11,021 feet long and 150 feet wide.

## 1.11 FLIGHT RECORDERS

The aircraft was fitted with two flight recorders. An Avidyne Multi-Function Display (MFD) s/n 20164454 and an Avidyne Primary Flight Display (PFD) s/n 2137414.

### 1.11.1 Avidyne MFD Description

The MFD unit is able to display the pilot checklist, terrain/map information, approach chart information and other aircraft/operational information depending on the specific configuration and options that are installed. One of the options available is a display of comprehensive engine monitoring and performance data.

Each MFD contains a CF memory card located in a slot on the side of the unit. This memory card contains all of the software that the MFD needs to operate. Additionally, this card contains all of the checklist, approach charts, and map information that the unit uses to generate the various cockpit displays. The flight log data is also stored on the unit's CF memory card.

During operation, the MFD display receives information from several other units that are installed on the aircraft. Specifically, the MFD receives GPS position, time and track data from the aircraft's GPS receiver. The MFD may also receive information from the aircraft concerning altitude, engine and electrical system parameters, and outside air temperature.

The MFD generates new data files for each MFD power-on cycle. The oldest file is dropped and replaced by a new recording once the storage limit has been reached. MFD data are sampled every six seconds, and are recorded to memory once every minute. If an interruption of power occurs during the minute between MFD memory write cycles, data sampled during that portion of a minute are not recorded.

### 1.11.2 Avidyne MFD Data Description

The CF card contained 77-recorded events from July 3, 2013 to November 10, 2013.

The accident event was identified by the recorded date and time stamp from 15:47:36 to 15:55:42 UTC over the span of 80 data points.

A previous flight was identified and preceded the accident event by about 8 minutes from 14:53:48 to 15:39:36 UTC.

### ***1.11.3 Avidyne PFD Description***

The PFD unit includes a solid state Air Data and Attitude Heading Reference System (ADAHRS) and displays aircraft flight data including altitude, airspeed, attitude, vertical speed, and heading. The PFD unit has external pitot and static port inputs for altitude, airspeed, and vertical speed information. Each PFD contains two TSOP2 Flash memory devices mounted on a riser card. The flash memory stores information the PFD unit uses to generate the various PFD displays. Additionally, the PFD has a data logging function, which is used by the manufacturer for maintenance and diagnostics.

The PFD samples and stores several data streams in a sequential fashion; when the recording limit of the PFD is reached the oldest record is dropped and a new record is added. Data from the ADAHRS is recorded at 5 Hz. Air data information such as pressure altitude, indicated airspeed, and a vertical speed are recorded at 1 Hz. Global Positioning System (GPS) and navigation display and setting are recorded at a rate of 0.25 Hz, and information about pilot settings of heading, altitude, and vertical speed references are recorded when changes are made.

### ***1.11.4 Avidyne PFD Data Description***

The PFD contained recorded events from September 27, 2013 to November 10, 2013. The accident event was identified by the recorded date and time parameters from 15:44:33 UTC to 15:56:21 UTC.

A previous flight was identified and preceded the accident event by about 8 minutes from 14:53:02 to 15:40:01 UTC.

## **1.12 WRECKAGE AND IMPACT INFORMATION**

The aircraft wreckage was found approximately 5 miles northwest of the airport in shallow waters making it difficult for rescuers to use a boat. The wreckage was recovered by Air & Sea Storage and transported to Fort Pierce, Florida for analysis.

### ***Location & Debris Field***

The main wreckage was located at 26 degrees, 35.34 minutes North latitude, 078 degrees, 46.29 minutes West longitude, in the shallow waters of the North shoreline of Grand Bahama Island, approximately 9 miles northwest of Freeport, Bahamas. The water depth at the time of the accident was reported to be approximately 3 and 1/2 feet. The wreckage was located on a heading of approximately 127 degrees.

### ***Fuselage***

Impact forces destroyed the fuselage.

### ***Wing***

During the on-site wreckage examination, impact damage was noted on the wing. The leading edge of the wing exhibited aft crushing from wing tip to wing tip. Multiple small fragments of fiberglass were noted on the ocean floor adjacent to the leading edge of the entire wing. The left and right flaps were separated from the wing. The flap actuator shaft was located in the water approximately 15 feet behind the wreckage. The actuator shaft was in the "Flaps-Up" position.

During the wreckage layout examination, aileron control cable continuity was confirmed. To aid in the recovery of the wreckage, the aileron cable was cut to separate the wing from the fuselage. The left and right ailerons were separated from the wing. The left and right flaps were separated from the wing. The roll trim motor was located in a position between neutral and full right trim position.

### ***Stabilizers***

During the on-site wreckage examination, it was noted that the empennage was separated from the fuselage. The rudder was separated from the vertical stabilizer.

The on-site wreckage examination revealed that the right elevator was separated from the horizontal stabilizer and was not observed at the site. Due to the location and condition of the wreckage, the wreckage could not be moved to aid in identifying the location of the right elevator. The left elevator remained attached to the horizontal stabilizer. The pitch trim motor was not observed on site.

During the recovery of the wreckage on November 19, 2013, the right elevator was located under the wreckage. To aid in the recovery of the wreckage, the rudder and elevator cables were cut to separate the empennage from the fuselage.

During the wreckage layout examination, rudder and elevator control cable continuity was

confirmed. The pitch trim motor was located in the full pitch up trim position.

During the on-site wreckage examination, the nose landing gear assembly was not observed. Both the left and right main landing gear assemblies remained attached to the wing.

During the wreckage layout examination, the nose landing gear assembly was examined. The nose landing gear assembly exhibited impact damage and was separated from the engine mount.

### ***Landing Gear***

During the on-site wreckage examination, the nose landing gear assembly was not observed. Both the left and right main landing gear assemblies remained attached to the wing.

During the wreckage layout examination, the nose landing gear assembly was examined. The nose landing gear assembly exhibited impact damage and was separated from the engine mount.

### ***Doors***

During the on-site wreckage examination, it was noted that the left cabin door, which remained attached to the fuselage, was broken in two pieces. The right cabin door was separated from the fuselage. The baggage door was not observed on-site or during the wreckage layout examination.

### ***Cockpit Documentation***

Due to the location and condition of the wreckage, the cockpit was not documented during the on-site wreckage examination.

### ***Seats & Restraints***

During the on-site wreckage examination, it was noted that the both front Crew Seats and both rear passenger seats remained attached to the fuselage.

### ***Recovered Non-Volatile Data***

The PFD and MFD were recovered from the wreckage and both units were sent to the NTSB for examination.

### ***Cirrus Airframe Parachute System (CAPS)***

During the on-site wreckage examination, it was noted that the CAPS safety pin was found in the handle. The pin is supposed to be removed before flight for the CAPS system. Failure to remove this pin would make it more difficult to deploy the system in an emergency. The Activation Handle holder bracket was bent aft.

The examination of the CAPS rocket motor

and “packed” D-Bag, which had been recovered by local police, revealed that the CAPS rocket motor propellant was expended. Seven stitches on the incremental bridle were broken. The D-Bag remained in a “packed” state. The physical evidence examined on site was consistent with a CAPS activation due to impact forces.

- As per the POH:

- **WARNING** •

In all cases, if the aircraft enters an unusual attitude from which recovery is not expected before ground impact, *immediate* deployment of the CAPS is required. The minimum demonstrated altitude loss for a CAPS deployment from a one-turn spin is 920 feet. Activation at higher altitudes provides enhanced safety margins for parachute recoveries. Do not waste time and altitude trying to recover from a spiral/spin before activating CAPS.

### ***Engine***

During the on-site wreckage examination, it was noted that the engine remained attached to the fuselage. The upper engine cowling was not observed on-site.

On January 7, 2014, a visual examination of the engine was conducted in Fort Pierce, FL. During the visual examination, spiral fractures were noted on the engine crankshaft just aft of the propeller flange. The engine was then boxed and shipped to CMI.

On February 12, 2014, an engine examination was completed at CMI. According to CMI’s Engine Examination Report, “the inspection of this engine did not reveal any pre-impact abnormalities that would have prevented normal operation and production of rated horsepower.”

### ***Propeller***

During the on-site wreckage examination, it was noted that the propeller assembly remained attached to the propeller flange. The propeller spinner exhibited spiral crushing. All three-propeller blades exhibited aft bending and chord wise scratches. One propeller blade rotated freely in the propeller hub. The propeller also displayed twisting deformation, some leading edge gouging, and blade polishing. One of the propeller blade tips had broken free from the rest of the propeller blade.

## **1.13 MEDICAL AND PATHOLOGICAL INFORMATION**

There were (4) four fatal injuries as a result of this accident. Forensic Toxicology performed on body fluid samples of the pilot revealed that there were no alcohol or other substances in the samples of the pilot that could have impaired his flying abilities.

## **1.14 FIRE**

No fire pre or post impact occurred.

## **1.15 SURVIVAL ASPECTS**

Due to the low altitude and sudden loss of control the aircraft experienced, and due to the extent of the damages sustained by the aircraft, survival of the occupants was not possible.

The pilot of the aircraft did not transmit any radio calls or displayed any type of emergencies other than his sudden utterance. Response by the Bahamas Sea Rescue Association (BASRA), Crash Fire Rescue, Royal Bahamas Police and Defense Force was timely.

## **1.16 TESTS AND RESEARCH**

The aircraft was stored at Air & Sea Storage, Fort Pierce, Florida and the engine was removed and engine analysis was conducted at Continental Motors Inc., Mobile Alabama with the participation of representatives from the Bahamas Civil Aviation Department and Cirrus manufacturers of the aircraft.

Continental Motors analyzed the engine. The inspection of this engine did not reveal any pre-impact abnormalities that would have prevented normal operation and production of rated horsepower.

Avidyne avionics installed on the aircraft capable of recording information to non-volatile memory were removed, two Avidyne 5000 Integrated Flight Displays and Avidyne DFC-100 Digital Flight Control (AP) were recovered and sent to the NTSB laboratory in Washington, DC for flight data to be downloaded and analyzed.

### ***1.16.1 Avidyne MFD Data Recovery***

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed that the MFD had sustained major damage, including a shattered screen and bent housing. The internal Compact Flash (CF) card was removed from the

MFD display and had negligible damage. The CF card was placed in an Avidyne test bench and the data was successfully extracted by the manufacturer's recommended procedure.

### ***1.16.2 Avidyne PFD Data Recovery***

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed that the PFD had sustained major impact damage, which included cracks to the unit's housing and screen. An internal inspection was performed and the device exhibited severe signs of corrosion from salt-water exposure.

The primary circuit board (PCB) containing the PFD's NVM was located and the two memory chips were removed and imaged. The data was obtained successfully from the memory chips using forensic software.

### ***1.16.3 Plots and Tabular Data***

The engine data from the MFD stops recording at 15:55:42 UTC. Prior to the end of the MFD recording, the fuel flow is shown dropping from 12 to 5 gallons per hour.

At about 15:55:55 UTC, the aircraft's pitch begins to steadily increase from 7 to 15 degrees over the course of about 10 seconds. During this time, the altitude begins to gradually decrease while exponentially banking to the right.

At about 15:56:10 UTC, the aircraft pitches abruptly down to a max recorded value of 76 degrees at 15:56:13 UTC. During this time, the aircraft's roll reaches about 180 degrees to the right and completes a roll over. Over the course of about 10 seconds, the aircraft exhibits attitudes consistent with a spin and completes 3 revolutions before the data ends.

Due to the stall and subsequent spin the pilot lost control of the aircraft and because of insufficient altitude he was unable to recover.

## **1.17 ORGANIZATIONAL AND MANAGEMENT INFORMATION**

The operator of the aircraft was First Class Flyers LLC base in Cicero, Hamilton U.S.A.

### **- Maintenance Organization**

The aircraft was maintain by Tom Aviation, Inc. / Indianapolis Metropolitan

Airport a FAA approved Repair Station CRS# 1  
TWR915M

**- Certification and Licensing Authority**

The aircraft was US registered and manufactured. The pilot was also US license and certificated by the Federal Aviation Administration or (FAA).

## ANALYSIS

- Weather was not a factor in this accident.
- ATC was not a factor in this investigation.
- The pilot was properly certificated and qualified for the flight.
- The aircraft was properly certificated in accordance with the existing regulations.
- The aircraft was properly maintained in accordance with applicable regulations.
- The aircraft departed the runway at 10:52am and crashed some 4 minutes later at approximately 10:56am.
- The altitude at which the spin occurred was not determined from data plots analyzed.
- During the on-site wreckage examination, it was noted that the CAPS safety pin was found in the handle. The pin is supposed to be removed before flight for the CAPS system. Failure to remove this pin would make it more difficult to deploy the system in an emergency.
- Engine Analysis was conducted and found no abnormalities that would have prevented normal operation of the engine.
- The engine data from the MFD stops recording at 15:55:42 UTC. Prior to the end of the MFD recording, the pilot pulled back on the power quite a bit, and then stated pitching up. The fuel flow on the MFD is recorded as dropping from 12 to 5 gallons per hour. It could not be determined whether his actions were intentional or he just was not paying attention to his airspeed.
- At about 15:55:55 UTC, the aircraft's pitch begins to steadily increase from 7 to 15 degrees over the course of about 10 seconds. During this time, the altitude begins to gradually decrease while exponentially banking to the right.
- At about 15:56:10 UTC, the aircraft pitches abruptly down to a max recorded value of 76 degrees at 15:56:13 UTC. During this time, the aircraft's roll reaches about 180 degrees to the right and completes a roll over. Over the course of about 10 seconds, the aircraft exhibits attitudes consistent with a spin and completes 3 revolutions before the data ends.
- This time depicted on the MFD and PFD recorders corresponded to the time of 15:56:03 when ATC tapes recorded the pilot as he exclaimed ..."oh shit, oh shit" before finally losing contact with him.
- Altitude data when the aircraft entered the spin or the altitude at the last recorded data point could not be determined.
- Additionally, time between spin entry and last data point also could not be determined from information available.

## CONCLUSIONS

### 3.1 FINDINGS

- The pilot was properly certificated and qualified for the flight.
- The aircraft was properly certificated in accordance with the existing regulations.
- The aircraft was properly maintained in accordance with applicable regulations.
- Search and Rescue was timely however, all occupants receive fatal injuries.
- The reason for the loss of situational awareness and control could possibly be from distractions while sightseeing.
- Continental Motors analyzed the engine. The inspection of this engine did not reveal any pre-impact abnormalities that would have prevented normal operation and production of rated horsepower.
- Information retrieved from recorders onboard the aircraft revealed that the aircraft exhibited attitudes consistent with a spin and completed 3 revolutions before the data ended.
- According to the POH for this aircraft, the only approved recovery from a spin is to deploy CAPS.
- As per the POH:
  - **WARNING**  
In all cases, if the aircraft enters an unusual attitude from which recovery is not expected before ground impact, *immediate* deployment of the CAPS is required. The minimum demonstrated altitude loss for a CAPS deployment from a one-turn spin is 920 feet. Activation at higher altitudes provides

enhanced safety margins for parachute recoveries. Do not waste time and altitude trying to recover from a spiral/spin before activating CAPS.

- During the on-site wreckage examination, it was noted that the CAPS safety pin was found in the handle. The pin is supposed to be removed before flight for the CAPS system. Failure to remove this pin would make it more difficult to deploy the system in an emergency.

### **3.2 PROBABLE CAUSE**

The probable cause of this accident has been determined as; loss of control as a result of a stall/spin condition with insufficient altitude for a safe recovery.

- Pilot did not deploy CAPS to recover from a spin.

### **3.3 CONTRIBUTING FACTORS**

- Loss of situational awareness.
- Insufficient altitude to recover from the loss of control as a result of the stall/spin condition.
- During the on-site wreckage examination, it was noted that the CAPS safety pin was found in the handle.

## **SAFETY RECOMMENDATIONS**

The AAIPU recommends that:

No recommendations made