

AAIPU# A10-00051

AIR ACCIDENT INVESTIGATION AND PREVENTION UNIT CIVIL AVIATION DEPARTMENT

NASSAU, N. P., BAHAMAS

AIRCRAFT ACCIDENT REPORT

ELECTRICAL FIRE IN COCKPIT

PIPER AZTEC PA 23-250

N41JN

BERRY ISLANDS, BAHAMAS

JANUARY 21, 2010





**Bahamas Department of Civil Aviation
Air Accident Investigation and Prevention Unit
P. O. Box AP-59244
Lynden Pindling International Airport
Nassau N. P., Bahamas**

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N41JN**

**ELECTRICAL FIRE
BERRY ISLAND, BAHAMAS
JANUARY 21, 2010**

**AAIPU# A10-00051
Adopted July 20, 2010**

Abstract: This report explains the circumstances surrounding the ditching of N41JN a PA-23 250 aircraft while the aircraft was enroute from Great Harbour Cay Int'l Airport, Berry Island, Bahamas to Lynden Pindling Int'l Airport, Nassau, N. P., Bahamas.



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

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July 20, 2010

Captain Patrick Rolle
Director
Civil Aviation Department
Seaban House
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Sir

The attached report summarizes the investigation into the circumstances of the accident involving N41JN, a Piper Aztec PA 23-250, registered in the United States to Crystal Aviation Inc. This accident occurred on January 21, 2010 at approximately 7:37am local (1237 UTC) time in the Northwest Passage, off frozen cay, in the Berry Island, Bahamas.

This report is submitted pursuant to Part XII, Regulation 80, and Schedule 19 of the Bahamas Civil Aviation (Safety) Regulation (CASR 2001) 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) Regulations (CASR April 17, 2001), 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 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 information becomes available.

Delvin R. Major
Investigator in Charge
Bahamas Department of Civil Aviation
Air Accident Investigation and Prevention Unit



BAHAMAS CIVIL AVIATION DEPARTMENT
AIR ACCIDENT INVESTIGATION AND PREVENTION UNIT

TITLE

Operator: Crystal Aviation Inc.
Manufacturer: Piper Aztec
Model: PA-23 250
Nationality: United States of America
Registration: N41JN
Place of Accident: In the Northwest Channel, Berry Island
Date of Accident: January 21, 2010

SYNOPSIS

Notification: DCA, NTSB, ICAO, FAA, Piper Aircraft Inc.
Investigating Authority: Civil Aviation Department
Air Accident Investigation and Prevention Unit
Investigator in Charge: Delvin R. Major
Accredited Representative: Mr. Jose Obregon – NTSB
Mr. Darrell T. Webb – FAA
Mr. William Standing - FAA
Releasing Authority: Civil Aviation Department
Date of Report Publication: July 20, 2010

ABBREVIATIONS and TERMINOLOGY

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

AAIPU	Air Accident Investigation and Prevention Unit
ADDS	Aviation Digital Data Service - Report by Meteorological Department
AIS	Automatic Information Services
ATS	Air Traffic Services
BDCA	Bahamas Department of Civil Aviation
BASRA	Bahamas Air Sea Rescue Association
CASR	Bahamas Civil Aviation (Safety) Regulations (April 17, 2001)
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CG	Center of Gravity
CVR	Cockpit Voice Recorder
DCA	Director of Civil Aviation
CAD	Civil Aviation Department
EST	Eastern Standard Time (-5 hours (-4DT) to convert from UTC)
FAA	Federal Aviation Administration
FSI	Flight Standards Inspectorate
FSS	Flight Service Station
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Condition
MALSF	Medium-intensity Approach Lighting System (with sequenced flashers)
MET	Meteorological Office / Department
METAR	Weather Report furnished by Meteorological Department
MIRL	Medium Intensity Runway Lights
NDB	Non-directional Beacon
NM or nm	Nautical Miles
NTSB	National Transportation Safety Board
PAPI	Precision Approach Path Indicator
RCA	Root Cause Analysis
SEP	Survival and Emergency Procedures Training
T/L	Technical Log
USA	United States of America
VFR	Visual Flight Rules
VOR	(Very High Frequency) Omni-directional Range Station
VMC	Visual Meteorological Conditions
UTC / Z	Universal Coordinated Time / Zulu time

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 time 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.

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.

Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Note.— The types of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in the Accident/Incident Reporting Manual (Doc 9156).

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.

Serious incident. An incident involving circumstances indicating that an accident nearly occurred.

Note 1.— The difference between an accident and a serious incident lies only in the result.

Note 2.— Examples of serious incidents can be found in Attachment C of Annex 13 and in the Accident/Incident Reporting Manual (Doc 9156).

Serious injury. An injury which is sustained by a person in an accident and which:

- a) requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or
- b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- c) involves lacerations which cause severe hemorrhage, nerve, muscle or tendon damage; or
- d) involves injury to any internal organ; or
- e) involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or
- f) involves verified exposure to infectious substances or injurious radiation.

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

“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.

“Substantial damage” - means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent failings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this Report.

BODY

1.0 FACTUAL INFORMATION:

1.1 HISTORY OF THE FLIGHT

On Thursday January 21, 2009 at approximately 7:37am (1237 UTC¹) a fixed wing, twin-engine, Piper Aztec PA 23-250 aircraft, United States Registration N41JN, crashed in an area called the Northwest Passage, in approximately 700+ feet of water, between Frasier Cay and Bond Cay, in the Berry Island, Bahamas. The exact coordinates of the aircraft crash site is unknown. The aircraft sank shortly thereafter.

The private flight departed Great Harbour Cay, Berry Island, Bahamas. The destination was Lynden Pindling Int'l Airport; Nassau, Bahamas The flight was operated under Visual Flight Rules² (VFR).

The pilot reported that about 5 minutes after takeoff while in level cruise at 1,200 feet, smoke filled the cabin from behind the instrument panel. He further stated that he executed emergency procedures and landed in the sea. The aircraft then sank.

Prior to the aircraft sinking the pilot was able to inflate and get into the life-raft from which he contacted the coast guard via a satellite phone which he carried on board the aircraft.

Both the US Coast Guard and the Bahamas Air Sea Rescue Association were alerted and dispatched resources to the area to look for the pilot.

He was later picked up by a boat in the area and taken to Chub Cay, Berry Island, Bahamas

1.2 INJURIES TO PERSONS

The pilot was the only person on the aircraft at the time and sustained no injuries.

1.3 DAMAGE TO AIRCRAFT

Damage to aircraft unknown as aircraft sank in waters too deep to be retrieved.

1.4 OTHER DAMAGE

No other damage reported.

1.5 PERSONNEL INFORMATION

The aircraft was piloted by Mr. Robert Lilliard of Crystal River, Florida, USA. Mr. Lilliard was the holder of a valid USA Private Pilot Certificate issued on January 26 2009 with Airplane Single Engine and Multi-engine Land category and class and instrument rating with no limitations.

Mr. Lilliard was also the holder of a valid USA third class medical certificate issued January 6 2009. Mr. Lilliard's medical certificate held no medical restrictions or limitations.

Mr. Lilliard's total flying experience including experience on this type of aircraft is unknown. The amount of hours flown by Mr. Lilliard in the last 24 hr, 7 days or the last 30 days prior to the accident is unknown.

FAA record indicates there have been no violations or prior FAA-recorded aviation accident history against Mr. Lilliard.

1.6 AIRCRAFT INFORMATION

Aircraft N41JN a US registered aircraft was manufactured by Piper Aircraft. The aircraft was a PA 23-250 model. The twin engine aircraft was manufactured in 1976 with serial number 27-7654149 and was registered to Crystal Aviation Inc. Wilmington Delaware The aircraft was fitted with two (2) reciprocating engine, model number TIO-540-SER manufactured by Lycoming Textron. The aircraft was certificated in the standard category. Airworthiness date of the aircraft was June 6, 1976.

The pilot reported that the aircraft had just accomplished an annual inspection 2 weeks prior to the accident. Additionally, a starter on the right engine was recently replaced prior to the accident.

b) It was not known if the mass and center of gravity were within prescribed limits.

c) The amount of fuel onboard the aircraft at the time of the accident was unknown.

1.7 METEOROLOGICAL INFORMATION

Bahamas Meteorological Department Bahamas Area Forecast dated Thursday January 21, 2010 valid for 12 hours from 1200 UTC was reviewed.

Special Features section of the report indicated high pressure system moving East over the Bahamas.

Significant Weather section of the report indicated, few / scattered³ clouds around 2,000 to 3, 000 feet, scattered clouds around 5,000 feet, broken⁴ clouds around 25,000 feet were forecasted. Isolated showers were expected. VFR conditions were expected in light showers.

Forecasted Upper Winds and Temperature for the same time period from 1200 UTC showed at 2,000 feet in the Central Bahamas the winds were forecasted from a direction of 140 degrees and a speed of 16 knots.

It was not known if the pilot received a weather report prior to departure from Great Harbour Cay International Airport. It was also not known whether the pilot received any enroute weather report from Nassau Flight Service Station.

1.8 AIDS TO NAVIGATION

At the time of the accident the aircraft had available to it, Nassau VOR⁵ on frequency 112.7 for its enroute and approach phase of flight. VOR equipment at Nassau was reported as serviceable at the time of the accident.

1.9 COMMUNICATIONS

Communication was established with Nassau Air Traffic Control after departure from Great Harbour Cay.

Nassau ATC records show communication was established with aircraft. At approximately 35nm Northwest of Nassau, the aircraft disappeared from radar scope. A search was immediately initiated. The US Coast Guard was immediately notified as was BASRA.

1.10 AERODROME INFORMATION

Departure or arrival Aerodrome information not provided as the aircraft did not crash on an aerodrome.

1.11 FLIGHT RECORDERS

N41JN was not fitted with a flight recorder as none was required by regulations for this type of aircraft.

1.12 WRECKAGE AND IMPACT INFO

Wreckage information not available as aircraft ditched in waters too deep to be retrieved.

1.13 MEDICAL AND PATHOLOGICAL

Not applicable as no injuries were reported.

1.14 FIRE

Pilot reported smoke in cockpit. No actual fire was reported.

1.15 SURVIVAL ASPECTS

Not applicable.

1.16 TESTS AND RESEARCH

No test conducted as aircraft ditched in waters too deep to be retrieved.

1.17 ADDITIONAL INFORMATION

No other pertinent information relevant at this time.

2.0 ANALYSIS

2.1 GENERAL

No analysis presented here at this time, aircraft not retrieved as waters too deep.

- **Weather –**

Weather not a factor in the accident.

- **Air Traffic Control –**

Air traffic services not a factor in the accident.

2.2 AIRCRAFT

No analysis presented here at this time, aircraft not retrieved as waters too deep.

3.0 CONCLUSIONS

3.1 FINDINGS

1. The pilot was properly certified and qualified for the flight.
2. The airplane was properly certificated and maintained in accordance with existing regulations.

3.2 PROBABLE CAUSE

The investigation team has determined that the probable cause of this accident as electrical fire possibly as a result of an electrical short.

This cause is based on the report by the pilot and could not be verified by the investigation team. The aircraft was never recovered as it ditched in waters too deep to be recovered.

3.3 CONTRIBUTING FACTORS

A possible electrical short may be a contributing factor.

4.0 SAFETY

RECOMMENDATIONS:

As a result of this investigation the AAIPU makes NO recommendations;

¹ The 24 hour clock is used to describe the time of day, Coordinated Universal Time (UTC) as particular events occurred.

² Visual Flight Rules - are a set of regulations which allow a pilot to operate an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going.

³ Scattered Clouds means occasional clouds

⁴ Broken Clouds - clouds which cover between 6/10 and 9/10 of the sky

⁵ VOR, short for VHF Omni-directional Radio Range, is a type of radio navigation system for aircraft. A VOR ground station broadcasts a VHF radio composite signal including the station's identifier, voice (if equipped), and navigation signal. The identifier is morse code. The voice signal is usually station name, in-flight recorded advisories, or live flight service broadcasts. The navigation signal allows the airborne receiving equipment to determine a magnetic bearing from the station to the aircraft (direction from the VOR station in relation to the Earth's magnetic North at the time of installation). VOR stations in areas of magnetic compass unreliability are oriented with respect to True North. This line of position is called the "radial" from the VOR. The "intersection" of two radials from different VOR stations on a chart provides an approximate position of the aircraft.