



# N13984 Final Report

<b>Location</b> 0.38 NM from the Exuma International Airport (MYEF), George Town, Exuma, Bahamas	<b>Accident number</b> OCC-2023/0002
<b>Date &amp; Time</b> 6 <sup>th</sup> January 2023 10:15 AM EST (1515 UTC)	<b>Registration</b> N13984
<b>Flight Conditions</b> Visual Flight Rules	<b>Injuries</b> Nil

## Narrative:

On the 6<sup>th</sup> January 2023 at approximately 10:27 am EST (1527 UTC), the Aircraft Accident Investigation Authority (AAIA) was notified of an occurrence that took place near the Exuma International Airport (MYEF), George Town, Exuma, Bahamas at approximately 10:15 am EST (1515 UTC) involving a Piper PA-23-250 aircraft with United States registration N13984. The flight had a planned destination of Hog Cay (MYEY), Exuma, Bahamas.

The private flight departed MYEF shortly after 10:00 am with three (3) persons on board. Prior to the accident flight, 46.1 gallons of 100LL fuel (Avgas) was added to the aircraft. The pilot in command of the aircraft advised that after takeoff from runway 12 and during climb out, at approximately 250 feet AGL, he observed a loss of power to the right engine. This was followed in quick succession by a loss of power to the left engine.

Subsequently, the pilot decided to identify a suitable area to land the aircraft, and upon observing an area of cleared land just to the right of the threshold of runway 30, he aligned the aircraft in that direction, at a heading of approximately 130°. As the aircraft descended the left wingtip of the aircraft impacted several trees first, before the aircraft hit the ground. As a result of the contact with trees, the aircraft spun and eventually came to rest on a heading of due west, approximately 270°. The noted coordinates was documented at 23°33'16.70"N 75°51'48.80"W.

The pilot and passengers were able to exit the aircraft and made contact with emergency personnel via mobile phone. Royal Bahamas Police Force (RBPF) and Airport Authority personnel were dispatched to the scene, however, prior to their arrival, the occupants had already left to make their way out of the wooded area. No injuries resulted from the accident.

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Fig. 1 Photo of N13984 at accident site

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### Aircraft and Owner / Operator Information:

<b>Aircraft Manufacturer</b>	<b>Registration</b>
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Piper

N13984

<b>Model / Series</b>	<b>Aircraft Category</b>
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PA-23-250

Normal

<b>Serial Number</b>	<b>Registered Owner</b>
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27-4602

Smith Aircraft  
Holdings



## **N13984 Final Report**

Piper Aztec N13984 was a fixed wing, six seat, twin engine aircraft with a normally aspirated engine. It had retractable landing gears, was an all metal plane and was designed to combine multi-engine power, performance, and safety, with smooth handling characteristics and operational adaptability.

### **Fuel System**

Four thirty-six gallon flexible fuel cells located outboard the engines provide fuel storage in the Aztec. The fuel system in the Aztec is simple, but completely effective. Fuel can be pumped from any tank to either engine, through use of engine-driven and electric fuel pumps.

For normal operation, fuel is pumped by the engine-driven pumps from the tanks directly to the adjacent fuel injector. The fuel valves can be left on at all times and the crossfeed left in the off position.

A pressure crossfeed system is incorporated for extended range during single-engine operation. To utilize the fuel on the inoperative engine side, turn the crossfeed on, the main valve on the inoperative engine on, the electric fuel pump of the inoperative engine on, then the main valve of the operating engine off.

Fuel can thus be used from one tank or the other by shutting off one main valve, and turning on the crossfeed, to balance fuel loads or to extend range. For all normal operation, it is recommended that fuel be pumped directly from the tanks to their respective engines, with the crossfeed off.

The fuel valve controls and crossfeed controls are located in the fuel control panel between the front seats. Two electric fuel gauges in the engine gauge cluster on the instrument panel indicate the fuel quantity in each tank.

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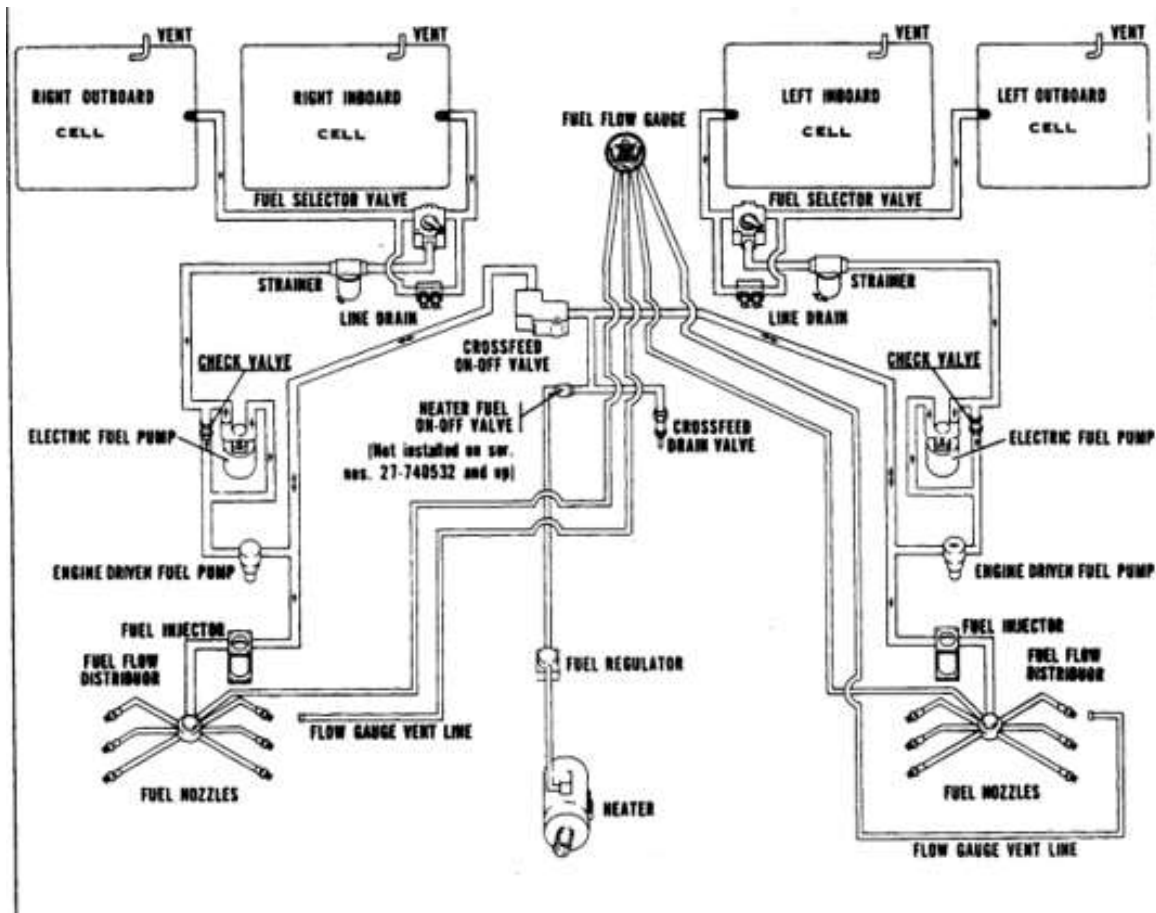


Fig. 2 Fuel System Diagram Piper PA-23-250  
(Piper Service Manual Reissued 2/18/81)

### Meteorological Information and Flight Plan:

#### Conditions at Accident site

Visual Meteorological  
Conditions

#### Condition of Light

Day

#### Observation Facility

Lynden Pindling Int'l  
Airport (MYNN), Nassau,  
Bahamas

#### Observation Time

10:00 am EST (1500  
UTC)

#### Observation Facility

#### Elevation

7 feet



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<b>Distance from Accident Site</b>	<b>Temp /Dewpoint</b>
140 NM	27°C/20°C
<b>Lowest Cloud Condition</b>	<b>Wind Direction / Speed</b>
FEW025	050/06 knots
<b>Lowest Ceiling</b>	<b>Visibility</b>
<b>Altimeter Setting</b>	<b>Type of flight Plan Filed</b>
30.20 in. HG	Visual Flight Rules
<b>Departure Point</b>	<b>Destination</b>
Exuma International Airport (MYEF), George Town, Exuma, Bahamas	Hog Cay (MYEY), Hog Cay, Exuma, Bahamas

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### Wreckage and Impact Information:

<b>Crew Injuries</b>	<b>Aircraft Damage</b>
Nil	Both wings, both propellers, aircraft nose, underside of fuselage
<b>Passenger Injuries</b>	<b>Aircraft Fire</b>
Nil	Nil
<b>Ground Injuries</b>	<b>Aircraft Explosion</b>
Nil	N/A
<b>Total Injuries</b>	<b>Latitude, Longitude</b>
Nil	23°33'16.70"N 75°51'48.80"W

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**Fig. 3 Google Earth imagery of crash site**

On the 7th January 2023, a team of investigators were dispatched to the accident site to conduct the on scene portion of the investigation. The aircraft point of rest was at coordinates 23°33'16.70"N 75°51'48.80"W at a distance of approximately 2,020 feet (0.38 NM) from the threshold of runway 30 at MYEF.

The first point of impact with trees (left wing) was measured to be approximately 1,820 feet from the threshold of runway 30 and the aircraft travelled for an additional 200 feet before coming to rest. The aircraft debris field was observed and it was noted where the aircraft travelled along a path of approximately 130° through trees and into a cleared area of land, leaving behind various aircraft components.

The left wingtip of the aircraft was observed at a distance of approximately 194 feet from the aircraft. The next piece of debris was the aircraft nosecone at a distance of approximately 60 feet from the aircraft, and the right wingtip a distance of approximately 25 feet from the aircraft (measurements taken from aircraft forward bulkhead).

The left wing of the aircraft received substantial damage and was detached from the fuselage at the wing chord, resting in an inverted position with one of the propeller blades bent extremely aft and the aileron partially separated from the trailing edge. The right wing was heavily damaged with a crumpled leading edge, but remained attached to the fuselage with one of the propeller blades bent aft. The nose section of the aircraft was separated and crumpled, resting in front of the inverted left wing of the aircraft. Impact damages were also observed to the tail section of the aircraft.

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**Fig. 4 Drone photo of accident site (c/o Flytec)**

An inspection of all the aircraft fuel tanks was conducted. Visual inspection revealed no breach of the right fuel cell bladder and it contained a quantity of liquid consistent in odor to that of aviation type gasoline.

Upon removal of the right wing filler cap, and looking into the wing, the fuel cell bladder was clearly visible, and a quantity of liquid was present at the lower end of the fuel cell bladder.

A visual and physical inspection was not conducted of the fuel cell bladder on the left inverted wing. However, on the ground in front of the left inverted wing, a trail of fluid was present. The fluid was believed to be aviation fuel based on its smell.

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Photo documentation of the aircraft instrument panel was conducted. The following control positions were observed:

Mixture levers – Full Rich  
Propeller levers – High RPM  
Left Throttle lever - Open  
Right Throttle – Aft position  
Left Electric Fuel Pump – On  
Right Electric Fuel Pump – On  
Master Switch – Off  
Pressure Crossfeed – On  
Left Fuel Selector – Outboard  
Right Fuel Selector – Outboard  
Left Engine Magnetos – Off  
Right Engine Magnetos – Off  
Flaps – Down position  
Landing Gear – Down position  
Landing Light - Off  
Taxi Light – Off  
Anti-collision Light – On  
Position – Light – On



### Pilot in Command

The pilot in command of the aircraft was issued a commercial pilot certificate by the United States Federal Aviation Administration (FAA) on 29<sup>th</sup> August 2008. Attached ratings to his commercial certificate are airplane single engine land, airplane multi-engine land and instrument airplane.

He possessed a First Class Medical issued in May 2021 with the limitation, “Must wear corrective lenses”.

### Aircraft Maintenance

The AAIA conducted a review of the aircraft maintenance documents (engine logs, airframe log) which revealed that the aircraft engines and airframe were maintained in compliance with the United States Code of Federal Aviation Regulations Part 91.409 (a) 1.





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### Analysis

The pilot in command of the aircraft advised that there was no prior indication of any malfunction or maintenance issue(s) pertaining to the operation of the aircraft during previous flights, as he had conducted successive flights between Exuma International Airport (MYEF) and Hog Cay (MYEY) within the preceding few days.

Due to the rare occurrence of an outright loss of power to both engines, special attention was placed on aspects related to aircraft fuel management. Investigations produced documentation of Avgas fuel purchased in the amount of 46.1 gallons prior to the accident flight. However, the documentation did not provide an indication of how the fuel was distributed to the various fuel tanks. In the absence of that specific information, there was no verification.

During the on-scene investigation, it was observed that both fuel selectors were positioned to the outboard fuel tanks. Additionally, the crossfeed was turned on. On scene inspection of the outboard right fuel cell bladder, did indicate the presence of a quantity of liquid with a smell consistent with that of aviation gasoline. Exact amount was not determined.

The excerpt below was taken from the Piper Aztec 'E' Pilot Operating Manual issued September 1<sup>st</sup> 1970, and is the procedure for fuel management during takeoff and landing operation:

3. FUEL MANAGEMENT
  - a. Normal Operation
    - (1) Take-off and landing
      - (a) Main fuel valve "ON"
      - (b) Pressure crossfeed "OFF"
      - (c) Electric fuel pumps "ON"

During the on scene investigation, the pressure crossfeed was observed and documented in the "ON" position. No verification was received to indicate that it was positioned to "ON" position prior to or during the accident sequence.

However, this observation suggests that if the crossfeed lever was positioned to the "ON" position prior to takeoff, then the aircraft would not be properly configured for takeoff in accordance with the Manufacturer's procedures and recommendations, which advise that "fuel be pumped directly from the tanks to their respective engines, with the crossfeed off". Aircraft configuration in accordance with manufacturers' procedures provide for optimal aircraft performance.



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Additionally, the excerpt below was also taken from the “Operating Tips” section of the Piper Aztec ‘E’ Pilot Operating Manual revised February 23<sup>rd</sup> 1976:

18. The shape of the wing fuel tanks is such that in certain maneuvers the fuel may move away from the tank outlet. If the outlet is uncovered, the fuel flow will be interrupted and a temporary loss of power may result. Pilots can prevent inadvertent uncovering of the outlet by having adequate fuel in the tank selected and avoiding maneuvers which could result in uncovering the outlet.

Unbaffled Tanks (Ser. Nos. 27-4426, 27-4574 through 27-7405476):

Normal takeoffs are not to be made when the tank selected is less than one-quarter full.

Running turning takeoffs should be avoided as fuel flow interruption may occur when the tank selected is less than half full.

Prolonged slips or skids of 30 seconds or more, in any pitch attitude or other unusual or abrupt maneuvers which could cause uncovering of the fuel outlet must be avoided when the tank selected is less than half full.

Taking into consideration evidence obtained during the course of the investigation, (i.e. there was no prior indication of an issue or malfunction with the aircraft, the amount of fuel purchased prior to the accident flight, the quantity of remaining fuel observed in the intact fuel tanks, and crossfeed observed in the “ON” position), it seems possible that the combination of these factors may have produced an environment conducive to an interruption in fuel flow event taking place.



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### **Conclusion**

#### **Findings**

1. The aircraft was certified, equipped and maintained in accordance with existing US CFR regulations Part 91 and approved procedures.
2. The aircraft had a valid certificate of airworthiness.
3. The aircraft was properly registered in the United States of America.
4. No evidence of a weight and balance for the aircraft was found during the investigation.
5. The pilot possessed a Commercial Pilot Certificate with single and multi-engine land and instrument Ratings issued by the United States Federal Aviation Administration (FAA) on 29<sup>th</sup> August 2008.
6. The pilot held a First Class Medical Certificate issued by the FAA in May 2021 with limitations “Must wear corrective lenses.”
7. The aircraft was not equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR); neither was required by regulations.
8. Aircraft came to rest at coordinates 23°33'16.70"N 75°51'48.80"W approximately 2,020 feet from the threshold of runway 30 at MYEF after dual loss of power after takeoff.
9. Weather was not a contributing factor in this occurrence.
10. Navigational Aids were not a contributing factor in this accident.
11. There was no evidence of any defect or malfunction in the aircraft that could have contributed to the accident.
12. There was no evidence of airframe failure or system malfunction prior to the accident.
13. A total of 46.1 gallons of 100LL fuel (Avgas) were added to fuel tanks prior to the accident flight.
14. The fuel crossfeed switch was observed in the “ON” position.
15. The fuel selectors were observed positioned to the outboard tanks.

**The AAIA lists the probable cause of this accident to be dual loss of power due to fuel starvation.**

#### **Contributing Factors include:**

- Fuel management

**There were no safety recommendations issued in relation to this occurrence.**



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### Administrative Information:

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#### Investigator in Charge

Kendall Dorsett Jr.

#### Additional Information

##### Release Date

30<sup>th</sup> May 2023

*All AAIA investigations are conducted in accordance with Annex 13 to the Convention on International Civil Aviation, and The Aircraft Accident Investigation Authority Act and Regulations. The sole objective of the investigation of an accident or incident under these Regulations is the prevention of future accidents and incidents.*

*It is not the purpose of such an investigation to apportion blame or liability. Accordingly, it is inappropriate that AAIA reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.*

Released in accordance with Section 25 of the Aircraft Accident Investigation Authority Act (AAIA) 2019 and Section 1.445 of the AAIA Regulations 2021.

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