



# Aviation Investigation Final Report

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<b>Location:</b>	Raleigh/Durham, North Carolina	<b>Accident Number:</b>	ERA23LA118
<b>Date &amp; Time:</b>	January 23, 2023, 18:44 Local	<b>Registration:</b>	N747PK
<b>Aircraft:</b>	Piper PA28	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fire/smoke (non-impact)	<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

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## Analysis

The pilot and his passenger prepared for a night flight in the flying club’s airplane to maintain the pilot’s currency. He tried to start the engine three times, priming the engine a total of 11 times, and “pumping” the throttle during one attempt, but it did not start. Concerned that he may have flooded the engine, he waited 5 minutes before attempting another start with full throttle and mixture at idle/cutoff. After this attempt, the passenger noted smoke and he realized that the engine was on fire. He told his passenger to egress and attempted to extinguish the fire with the onboard fire extinguisher; however, the fire substantially damaged the airplane’s the fuselage, engine mounts, and firewall. The pilot reported no mechanical malfunctions or failures with the airplane that would have precluded normal operation. The Pilot’s Operating Handbook for the airplane suggested priming 1 to 3 times before engine start.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot’s flooding the engine with fuel during a cold engine start, which resulted in an engine fire.

## Findings

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<b>Personnel issues</b>	Decision making/judgment - Pilot
<b>Aircraft</b>	(general) - Incorrect use/operation

## Factual Information

### History of Flight

<b>Standing-engine(s) start-up</b>	Fire/smoke (non-impact) (Defining event)
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### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	48, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 3 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	October 29, 2021
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	April 26, 2022
<b>Flight Time:</b>	224 hours (Total, all aircraft), 48 hours (Total, this make and model), 159 hours (Pilot In Command, all aircraft), 11 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N747PK
<b>Model/Series:</b>	PA28 180	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1968	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal; Utility	<b>Serial Number:</b>	28-4647
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	September 27, 2022 Annual	<b>Certified Max Gross Wt.:</b>	2400 lbs
<b>Time Since Last Inspection:</b>	71.5 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	6174.8 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	C126 installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	O-360-A4A
<b>Registered Owner:</b>	RALEIGH FLYING CLUB LLC	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	RALEIGH FLYING CLUB LLC	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Dusk
<b>Observation Facility, Elevation:</b>	RDU,395 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	18:51 Local	<b>Direction from Accident Site:</b>	17°
<b>Lowest Cloud Condition:</b>	Few / 6000 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>		<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	Unknown / Unknown
<b>Wind Direction:</b>	310°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.12 inches Hg	<b>Temperature/Dew Point:</b>	7°C / -4°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Raleigh/Durham, NC	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Oxford, NC (HNZ)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class C

## Airport Information

<b>Airport:</b>	RALEIGH-DURHAM INTL RDU	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	435 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 None	<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	35.877639,-78.787472(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Spencer, Lynn
<b>Additional Participating Persons:</b>	Lynda Falcon; FAA/FSDO; Greensboro, NC
<b>Original Publish Date:</b>	June 15, 2023
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 4</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=106640">https://data.ntsb.gov/Docket?ProjectID=106640</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).