



# Aviation Investigation Final Report

<b>Location:</b>	Wakefield, Virginia	<b>Accident Number:</b>	ERA19TA235
<b>Date &amp; Time:</b>	July 25, 2019, 11:40 Local	<b>Registration:</b>	N47028
<b>Aircraft:</b>	Cessna 152	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel contamination	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

During the preflight inspection, the pilot sampled the fuel from the right main fuel tank seven times until no water was present in the sample. He also checked the airplane’s left main fuel tank, fuel strainer, and a belly sump and there was no water in those samples. He flew uneventfully to a nearby airport where he intended to perform practice touch and go landings. During the takeoff phase of the first practice touch-and-go landing, the airplane was flying about 25 ft above ground level when the engine sputtered. The pilot landed the airplane on the remaining portion of the runway near the departure end, then because there was insufficient runway to stop, he turned the airplane left. The airplane impacted a perimeter fence before coming to rest upright. The fuselage and right wing were substantially damaged.

Examination of the airplane revealed water in fuel samples recovered from the carburetor, the belly sump, and the firewall sump, which indicates that water was still present in the fuel system following the pilot’s preflight inspection. The examination also revealed a gray putty substance around the right wing fuel cap gasket, which did not appear to be an approved repair. Additionally, before the day of the accident, the airplane sat outside in rain. Given this information, it is likely that rainwater leaked into the fuel system through he improperly sealing right wing tank fuel cap.

## Probable Cause and Findings

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

The pilot's inadequate preflight inspection, which failed to detect and remove all water from fuel, and

maintenance personnel's unapproved repair of the right wing fuel cap, which resulted in fuel contamination and a subsequent partial loss of engine power during takeoff.

## Findings

<b>Personnel issues</b>	Preflight inspection - Pilot
<b>Aircraft</b>	Fuel - Fluid condition
<b>Personnel issues</b>	Repair - Maintenance personnel
<b>Aircraft</b>	Fuel storage - Incorrect service/maintenance

## Factual Information

### History of Flight

<b>Takeoff</b>	Fuel contamination (Defining event)
<b>Takeoff</b>	Loss of engine power (partial)
<b>Takeoff-rejected takeoff</b>	Runway excursion
<b>Takeoff-rejected takeoff</b>	Collision with terr/obj (non-CFIT)

On July 25, 2019, about 1140 eastern daylight time, a Cessna 152, N47028, was substantially damaged during a rejected takeoff at Wakefield Municipal Airport (AKQ), Wakefield, Virginia. The solo private pilot was not injured. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and no flight plan was filed for the local flight.

The pilot stated that prior to his first flight of the day from Norfolk International Airport (ORF), Norfolk, Virginia, he performed a preflight inspection of the airplane that included a check of each fuel tank, which were full. No water was detected in the left main fuel tank, but during sump testing of the right main fuel tank, he had to get seven samples from the tank before the sample was clear and no water was present. He also checked the fuel strainer and a belly drain, and there was no water in the sample from either.

The pilot flew from ORF to AKQ uneventfully with the intention to perform touch-and-go landings on runway 20, a 4,337-ft-long asphalt runway. During the takeoff phase of the first touch-and-go landing, about 25 feet above ground level, the engine sputtered. The pilot landed the airplane on the remaining portion of the runway, near the departure end. Realizing there was insufficient runway to stop, he turned the airplane left and it impacted a perimeter fence before coming to rest upright. The pilot added that there were no preimpact mechanical malfunctions with the airplane.

Examination of the airplane by a Federal Aviation Administration inspector revealed that the right wing and right horizontal stabilizer were damaged. During the examination, the inspector recovered fuel with water in it from three sources: the carburetor, the belly sump, and the firewall sump. The inspector also noted what appeared to be a gray putty substance around the right wing fuel cap gasket, which did not appear to be an approved repair. The inspector added that prior to the day of the accident, the airplane sat outside in rain.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	65, 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>	3-point
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 With waivers/limitations	<b>Last FAA Medical Exam:</b>	December 6, 2018
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	March 28, 2019
<b>Flight Time:</b>	235 hours (Total, all aircraft), 5 hours (Total, this make and model), 134 hours (Pilot In Command, all aircraft), 2 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N47028
<b>Model/Series:</b>	152	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1979	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Utility	<b>Serial Number:</b>	15283159
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	February 11, 2019 Annual	<b>Certified Max Gross Wt.:</b>	1669 lbs
<b>Time Since Last Inspection:</b>	68 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	8685 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-235 SERIES
<b>Registered Owner:</b>	Bishop's LTD	<b>Rated Power:</b>	115 Horsepower
<b>Operator:</b>	Norfolk Flying Club	<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>	Day
<b>Observation Facility, Elevation:</b>	AKQ,111 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	11:54 Local	<b>Direction from Accident Site:</b>	0°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.12 inches Hg	<b>Temperature/Dew Point:</b>	28°C / 17°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Wakefield, VA (AKQ )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Wakefield, VA (AKQ )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	11:40 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Wakefield Municipal Airport AKQ	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	111 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	20	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	4337 ft / 75 ft	<b>VFR Approach/Landing:</b>	Touch and go;Traffic pattern

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	36.981109,-77.003051

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Gretz, Robert
<b>Additional Participating Persons:</b>	Amber White; FAA/FSDO; Richmond, VA
<b>Original Publish Date:</b>	January 28, 2021
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=99934">https://data.nts.gov/Docket?ProjectID=99934</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](#).