



National Transportation Safety Board Aviation Accident Final Report

Location:	San Bernardino, California	Accident Number:	WPR16LA101
Date & Time:	May 6, 2016, 12:00 Local	Registration:	N2AN
Aircraft:	Antonov AN2	Aircraft Damage:	Substantial
Defining Event:	Fuel contamination	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The commercial pilot was entering the airport traffic pattern for landing during a familiarization flight. He reported that he turned on the carburetor heat, switched the fuel tank selector to the right fuel tank, and shortly thereafter, the engine experienced a total loss of power. The pilot attempted numerous times to restart the engine but was unsuccessful. After realizing that he would not be able to reach the runway, he decided to make a forced landing to a small field. During the landing approach, the airplane contacted a power line, nosed over, and came to rest inverted, resulting in substantial damage to the wings and fuselage.

During the postaccident examination of the airplane, about 16 ounces of water were removed from the fuel system. Water was present in the lower gascolator, the fine fuel filter (upper gascolator), and subsequent fuel line to the carburetor inlet. A brass screen at the carburetor inlet and 2 carburetor fuel bowl thumb screens also contained corrosion, water, and rust.

The approved aircraft inspection checklist called for washing the carburetor and main fuel filter every 50 hours and cleaning and/or replacing the fine fuel filter every 100 hours. The fine fuel filter is not easily accessible and not able to be drained during a preflight inspection. The mechanic who completed the most recent inspection stated that he did not drain or check the fine fuel filter. The last logbook entry that specifically stated the fuel filters were cleaned was about 4 years before the accident.

Probable Cause and Findings

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

The mechanic's failure to inspect the fine fuel filter gascolator as required during the most recent inspection, which resulted in a total loss of engine power due to fuel contamination.

Findings

Personnel issues	Scheduled/routine maintenance - Maintenance personnel
Aircraft	Fuel filter-strainer - Not serviced/maintained

Factual Information

On May 06, 2016, about 1200 Pacific daylight time, an ANTONOV AN2 airplane, N2AN, sustained substantial damage during a forced landing, following a reported loss of engine power during approach to the San Bernardino International Airport, San Bernardino, California. The airplane was owned by the American Airpower Heritage Flying Museum, and was being operated by the pilot as a familiarization flight under the provisions of 14 Code of Federal Regulations Part 91. The commercial pilot and sole passenger were not injured. Visual meteorological conditions prevailed and no flight plan had been filed for the flight. The airplane departed the Cable Airport, Upland, California, about 1145.

In a telephone conversation with the National Transportation Safety Board investigator-in-charge, the pilot stated that the flight was a familiarization flight for a new member of their chapter of the Commemorative Air Force. The flight departed the Cable airport and flew east along the mountains, headed to San Bernardino. They contacted the San Bernardino tower and were instructed to enter the crosswind for runway 24. As part of the before landing checklist, the pilot turned on the carburetor heat and switched the fuel tank selector to the right fuel tank. Shortly thereafter, the engine lost all power. The pilot attempted numerous times to restart the engine, but was unsuccessful.

The pilot realized that he would not be able to reach the airport, and decided to make a forced landing to a small field in a residential area. During the landing approach, the airplane contacted a power line. After touching down in the field the airplane nosed over and came to rest inverted, which resulted in substantial damage to the wings and fuselage.

During the NTSB examination of the airplane, about 16 ounces of water was removed from the fuel system. Water was present in the lower gascolator, the fine fuel filter (upper gascolator), and subsequent fuel line to the carburetor inlet. A brass screen at the carburetor inlet and 2 carburetor fuel bowl thumb screens also contained corrosion, water and rust. (See Photo 1.)



Photo 1 - Fuel and contamination removed from fuel lines and gascolator

The approved aircraft inspection checklist called for washing the carburetor and main fuel filter every 50 hours and cleaning and/or replacing the fine fuel filter every 100 hours. The fine fuel filter located halfway up the firewall on the left side of the aircraft is not easily accessible and not in a position to be drained prior to flight. The mechanic that completed the most recent inspection stated that he did not drain or check the fine fuel filter. The last logbook entry that specifically stated the fuel filters were cleaned was in September 2012.

History of Flight

Enroute	Fuel contamination (Defining event)
Emergency descent	Loss of engine power (total)
Emergency descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	Age:	77, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	September 21, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	August 16, 2014
Flight Time:	3350 hours (Total, all aircraft), 58 hours (Total, this make and model)		

Pilot-rated passenger Information

Certificate:	Airline transport	Age:	44, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	July 29, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	May 4, 2016
Flight Time:	4000 hours (Total, all aircraft), 0 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Antonov	Registration:	N2AN
Model/Series:	AN2	Aircraft Category:	Airplane
Year of Manufacture:	1984	Amateur Built:	
Airworthiness Certificate:	Experimental (Special)	Serial Number:	43798
Landing Gear Type:	Tailwheel	Seats:	
Date/Type of Last Inspection:	December 1, 2015 AAIP	Certified Max Gross Wt.:	
Time Since Last Inspection:	14 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2924 Hrs as of last inspection	Engine Manufacturer:	PZL
ELT:	C91A installed, activated, did not aid in locating accident	Engine Model/Series:	ASH 62 IR
Registered Owner:		Rated Power:	1000 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:	Confederate Air Force	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KSBD, 1159 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	17:47 Local	Direction from Accident Site:	220°
Lowest Cloud Condition:	Scattered / 2700 ft AGL	Visibility	7 miles
Lowest Ceiling:	Overcast / 3500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	320°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.88 inches Hg	Temperature/Dew Point:	17° C / 9° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Upland, CA (CCB)	Type of Flight Plan Filed:	None
Destination:	San Bernardino, CA (SBD)	Type of Clearance:	None
Departure Time:	11:30 Local	Type of Airspace:	Class D

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	34.114166,-117.215835(est)

Preventing Similar Accidents

Mechanics Manage Risk and Follow Procedures

Mistakes made while performing aircraft maintenance and inspection procedures have led to in-flight emergencies and fatal accidents. System or component failures are among the most common defining events for fatal general aviation accidents. Mechanics should learn about and adhere to sound risk management practices to prevent common errors; even well-meaning, motivated, experience technicians can make mistakes. Fatigue can be a hazard even for mechanics, and it can be linked to forgetfulness, poor decision-making, reduced vigilance, and ultimately interfere with the mechanic's ability to do the job safely.

Mechanics should carefully follow manufacturers' instructions to ensure that the work is completed as specified. Also, up-to-date instructions and manuals should be used; other qualified mechanics are also a great resource. Mechanics need to pay close attention to the safety and security of the items that undergo maintenance, as well as the surrounding components that may have been disconnected or loosened during the maintenance.

Inspecting maintenance work is a great way to ensure that it is done correctly. Routine inspections should be thorough and items needing immediate attention should be addressed rather than deferred.

See http://www.nts.gov/safety/safety-alerts/documents/SA_022.pdf for additional resources.

The NTSB presents this information to prevent recurrence of similar accidents. Note that this should not be considered guidance from the regulator, nor does this supersede existing FAA Regulations (FARs).

Administrative Information

Investigator In Charge (IIC):	Shaver, Christopher
Additional Participating Persons:	Rod Early; FAA Riverside FSDO; Riverside, CA Jim Lasche; Confederate Air Force; Dallas, TX
Original Publish Date:	May 1, 2017
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=93115

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).