Aviation Investigation Final Report

Location:	Atlanta, Georgia	**Accident Number:**	ERA09LA516
Date & Time:	September 4, 2009, 13:30 Local	**Registration:**	N517P
Aircraft:	SIAI-MARCHETTI F.260	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to the pilot, the preflight, engine run-up, taxi, and takeoff from runway 9 were all normal. At 500 feet above ground level (agl) the engine lost power and the pilot maneuvered the airplane for a downwind landing on runway 27. The pilot confirmed the positions of the throttle, propeller, fuel pump, and fuel selector controls and the engine regained power temporarily. About 300 feet agl, the engine again lost power and the pilot elected to land in an off-airport field with the gear up due to the extension time required for the airplane's landing gear system. During a postaccident examination of the airplane by a Federal Aviation Administration (FAA) inspector, operation of the airframe boost pumps revealed that the pumps would not draw fuel. Closer examination of the fuel selector valve and fuel shut-off cock revealed staining consistent with fuel leakage. When positive pressure was applied to the fuel tanks, fuel leaked around the shaft of the fuel shut-off cock located under the cockpit instrument panel area. Pressure was removed from the tanks, the fuel shut-off cock was sealed with a rag, and the boost pumps were then able to draw fuel when power was applied. Removal of the rag created an air leak, and the boost pumps would not draw fuel. The fuel selector valve and the fuel shut-off cock were then removed, disassembled, and examined under the supervision of the FAA inspector. Examination revealed that the interior O-ring seals for the selector shafts were loose on both. Another owner of the same make and model airplane provided a written account of a nearly identical scenario, which was resolved with the replacement of the O-ring seals. The manufacturer's Special Inspection List outlined "overhaul/replacement" of the fuel shut-off cock every 5 years or 1,500 flight hours, whichever occurred first. At the time of the accident, the airplane had accrued 1,592 total aircraft hours. Seven months, and 8 aircraft hours had elapsed since the airplane's most recent annual inspection. According to the FAA inspector, 14 CFR Part 43, Appendix D, listed the minimum inspection requirements for the completion of an annual inspection, that manufacturer's recommended overhaul schedules were recommended and not mandatory, and that the overall responsibility for the airworthiness of the airplane fell to the owner/operator.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power due to a fuel system air leak as a result of a deteriorated O-ring seal in the fuel shut-off cock. Contributing to the accident was the exceedance of the suggested overhaul schedule for the fuel shut-off cock.

Findings

Aircraft	Fuel selector/shutoff valve - Fatigue/wear/corrosion
Aircraft	Fuel selector/shutoff valve - Not serviced/maintained

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On September 4, 2009, about 1330 eastern daylight time, a Siai-Marchetti SF-260, N517P, was substantially damaged following a loss of engine power and forced landing after takeoff at Cobb County Airport (RYY), Atlanta, Georgia. The certificated private pilot and passenger sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight that was originating at the time of the accident. The flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to the pilot, the preflight, engine run-up, taxi, and takeoff from runway 9 were all “normal.” At 500 feet above ground level (agl), the engine lost power, and the pilot maneuvered the airplane for a downwind landing on runway 27. The pilot confirmed the positions of the throttle, propeller, fuel pump, and fuel selector controls and the engine temporarily regained power. About 300 feet agl, the engine again lost power, and the pilot elected to land gear up in a field off-airport, due to the extension time required for the airplane’s landing gear system. The pilot described a “benign” off-airport landing in tall weeds and brush, and he and his passenger were greeted by airport emergency personnel almost immediately after egressing the airplane.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with a rating for airplane single engine land. His most recent FAA third class medical certificate was issued April 18, 2008. The pilot reported 1,300 total hours of flight experience, of which 369 hours were in the accident airplane make and model.

AIRCRAFT INFORMATION

According to the owner, the airplane was manufactured in 1968 and had accrued 1,592 total aircraft hours. Its most recent annual inspection was completed on January 30, 2009, at 1,584 total aircraft hours.

METEOROLOGICAL INFORMATION

At 1346, the weather reported at RYY included few clouds at 3,000 feet and winds from 110 degrees at 12 knots, gusting to 16 knots. The visibility was 10 miles. The temperature was 24 degrees Celsius (C) and the dew point was 15 degrees C.

WRECKAGE AND IMPACT INFORMATION

Examination of the airplane by an FAA inspector revealed the airplane sustained substantial damage to the nose section, firewall, cabin structure, and empennage.

The integrity of the fuel system was verified, and no evidence of fuel contamination was noted during sampling. The airframe fuel filters were inspected as well as the airframe fuel pump filters with no clogs or contamination noted. The carburetor was broken off at its mount; however the lines and controls were still intact. Operation of the airframe boost pumps revealed that the pumps would not draw fuel. Closer examination of the fuel selector valve and fuel shut-off cock revealed staining consistent with fuel leakage.

When positive pressure was applied to the fuel tanks, fuel leaked around the shaft of the fuel shut-off cock located under the cockpit instrument panel area. Pressure was removed from the tanks, the fuel shut-off cock was sealed with a rag, and the boost pumps were then able to draw fuel when power was applied. Removal of the rag created an air leak, and the boost pumps would not draw fuel.

On June 17, 2010, the fuel selector valve and the fuel shut-off cock were removed, disassembled, and examined under the supervision of an FAA inspector. Examination revealed that the interior seals for the selector shafts were "sloppy" on both.

The manufacturer's Special Inspection List, outlined "overhaul/replacement" of the fuel shut-off cock every 5 years or 1,500 flight hours, whichever occurred first.

According to the inspector, the amount of calendar time that had elapsed between the annual inspection and his post-accident examination of the airplane allowed for the "seal to have possibly leaked at some time after the annual inspection."

The FAA inspector was asked to clarify whose responsibility it was to comply with the manufacturer's recommended overhaul schedule. He stated that such schedules were recommended, not mandatory, and that the overall responsibility for the airworthiness of the airplane fell to the owner/operator.

According to the inspector, "The IA (inspection authority) performing the inspection is responsible for the inspection as required by CFR Part 43. Appendix D lists the minimum inspection requirements for the completion of an annual inspection. The rules require an annual inspection… There is no requirement that I know of to formally advise the aircraft owner of recommended overhauls."

ADDITIONAL INFORMATION

Examination of a SIAI-Marchetti "unofficial" website revealed a discussion thread between the website's author and an SF-260 owner about his experience troubleshooting a rough-running engine. That owner was contacted, and he provided a written statement that outlined the diagnosis and solution to the problem he experienced with his airplane.

According to the owner, he plumbed a can of fuel directly to the mechanical fuel pump and then to the "upstream side" of the gascolator, and the engine ran smoothly each time, which suggested to him that "the problem was somewhere in the plumbing between the tanks and gascolator." He then plumbed the fuel directly from the right tip tank to the fuel line upstream of the gascolator "bypassing the faulty fuel selector," and the engine ran smoothly again.

According to the owner, "The culprit was quickly identified as the 'O' ring (seal) around the stem shaft of the fuel tank selector. On examination we determined that the ring had hardened with age, losing all its pliancy and admitting enough air to cause the roughness in the engine. Installing a fresh 'O' ring cleared up the problem."

Pilot Information

Certificate:	Private	**Age:**	53,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	April 18, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 28, 2008
Flight Time:	1300 hours (Total, all aircraft), 369 hours (Total, this make and model), 1240 hours (Pilot In Command, all aircraft), 4 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	SIAI-MARCHETTI	**Registration:**	N517P
Model/Series:	F.260	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	106
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 30, 2009 Annual	**Certified Max Gross Wt.:**	2430 lbs
Time Since Last Inspection:	8 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1592 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-540-E4A5
Registered Owner:	SEMONIAN GARY A	**Rated Power:**	260 Horsepower
Operator:	SEMONIAN GARY A	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	RYY,1040 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	13:46 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Few / 3000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / 16 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.13 inches Hg	**Temperature/Dew Point:**	24°C / 15°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Atlanta, GA (RYY)	**Type of Flight Plan Filed:**	None
Destination:	Atlanta, GA (RYY)	**Type of Clearance:**	VFR
Departure Time:	13:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Cobb County RYY	**Runway Surface Type:**	Concrete
Airport Elevation:	1040 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	09	**IFR Approach:**	None
Runway Length/Width:	6305 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	34.013053,-84.598609

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Stephen A DaCosta; FAA/FSDO; Atlanta, GA
Original Publish Date:	January 7, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=74710