Aviation Investigation Final Report

Location:	Franklin, Virginia	**Accident Number:**	NYC07LA244
Date & Time:	September 30, 2007, 16:00 Local	**Registration:**	N52359
Aircraft:	Beech F33A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While practicing a holding pattern prior to commencing a very high frequency omnidirectional range (VOR) approach, the pilot switched fuel tanks. A short time later, the pilot commenced the approach. After passing the VOR inbound, and starting a descent to the minimum descent altitude, at approximately 1,000 feet, the engine lost power. The pilot transferred control to the safety pilot, and attempted several engine restarts. The airplane was over a forest at the time, and the safety pilot flew the airplane between two trees so that the wings would take most of the initial impact. The airplane came to rest in another tree 50 to 80 feet off the ground. Terrain conditions precluded examination of the airplane on scene, and additional damage occurred when it was removed from the tree for transport to a recovery facility. A postflight examination of the airplane revealed no anomalies that would have precluded normal operation, and a sufficient quantity of fuel had been onboard. The fuel selector valve was located to the left and forward of the pilot's seat, and the airplane's fuel tanks were replaced 6.6 operating hours prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power during approach for undetermined reasons. Contributing to the accident was the unsuitable terrain.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
1. REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - EMERGENCY

Findings
2. (F) TERRAIN CONDITION - NONE SUITABLE
3. OBJECT - TREE(S)

Factual Information

On September 30, 2007, about 1600 eastern daylight time, a Beech F33A, N52359, was substantially damaged during a forced landing, while approaching Franklin Municipal-John Beverly Rose Airport (FKN), Franklin, Virginia. The certificated commercial pilot and the certificated airline transport pilot incurred minor injuries. Visual meteorological conditions prevailed, and no flight plan had been filed for the local flight, which departed Hampton Roads Executive Airport (PVG), Chesapeake, Virginia, about 1510. The personal flight was conducted under 14 Code of Federal Regulations Part 91.

According to a Federal Aviation Administration (FAA) inspector and FAA records, both pilots were certificated flight instructors. The commercial pilot, who was the pilot-in-command and sitting in the left seat, was practicing the very high frequency omnidirectional range (VOR) runway 9 approach, and the airline transport pilot was serving as a safety pilot.

In a written statement, the commercial pilot reported that en route to Franklin, he performed several steep turns to "get comfortable" with the airplane, and that the airplane arrived over the Franklin VOR at 4,000 feet, where he executed "two turns" in holding. While flying straight and level "in the first portion of the hold," the pilot switched fuel tanks. The engine continued to run normally for "approximately 5-7 minutes throughout the two hold laps." The commercial pilot subsequently reduced engine manifold pressure to 16 inches on the final approach course, and approximately 30 to 60 seconds later, the engine lost power at less than 1,000 feet of altitude. The commercial pilot then attempted three restarts, with the safety pilot utilizing the boost pump on the second and third attempts. The commercial pilot also noted that the fuel selector, mixture, and throttle were "manipulated" during the restart attempts.

In his written statement, the safety pilot stated that after the hold, the commercial pilot descended the airplane to 1,600 feet to commence the VOR approach. After crossing the VOR inbound, and after starting the descent toward the minimum descent altitude (MDA), at approximately 1,000 feet, the engine lost power. The commercial pilot then gave the safety pilot the controls, and the commercial pilot attempted to restart the engine. The airplane was over a forest at the time, at treetop level, and the safety pilot decided to fly between two trees so the wings would take most of the initial impact. After the airplane came to a stop, the safety pilot opened the door and noticed they were in a tree 50 to 80 feet off the ground. At that point, the safety pilot called 911 on his cell phone.

In a telephone interview with the FAA inspector, the safety pilot indicated that the commercial pilot had switched the fuel tanks from the left to right on the outbound leg, descending, and the engine quit right after the power reduction at the final approach fix, with the landing gear down. He also noted that while in the trees, he and the commercial pilot discussed switching the fuel as a possible source of the problem, and that he wasn’t aware of the switching of tanks until

the discussion.

The safety pilot subsequently stated to the National Transportation Safety Board that he could not recall if he activated the fuel boost pump during the engine restart attempts, as he was concentrating on flying the airplane.

Terrain conditions precluded examination of the airplane on scene, and additional damage occurred when it was removed from the tree and transported across a swamp.

After recovery, the airplane was moved to a storage facility in Delaware for examination by another FAA inspector. According to the inspector's written report, the fuselage had been cut apart aft of the passenger compartment to facilitate hauling. The aft, outboard sections of both wings were separated from the rest of the wing structure about 36 inches from the fuselage. The flaps remained with the main wing structure, while the ailerons remained with separated portions. The fuel tanks were ruptured, and there was no evidence of foreign matter in the tanks. The vent lines were "torn apart," but there was no indication of blockage. The inspector was unable to access the fuselage fuel strainer. There was no evidence of fuel or foreign matter in the strainer at the throttle air valve, no fuel in the lines at the engine driven pump, and no fuel in the lines between the fuel manifold valve (spider) and the fuel injectors. The fuel tank selector was in the "Left Tank" position.

According to a fuel receipt, on September 14, 2007, 25.67 gallons of fuel were "self-service" purchased for the airplane. The commercial pilot reported that the airplane had 74 gallons of fuel prior to takeoff, and the safety pilot reported a heavy odor of fuel while the airplane was in the tree.

The airplane underwent its latest annual inspection on August 20, 2007, at 1,667.9 tachometer hours. During the inspection, both the left and right fuel tanks were replaced. At the time of the accident, the tachometer indicated 1,674.5 hours.

According to the Beechcraft F33A pilot's operating handbook (POH), the fuel selector valve handle was located forward and to the left of the pilot's seat. Other than stating that takeoffs and landings should be made using the tank that is more nearly full, there was no additional information about fuel tank selection.

The POH also stated, under "Air Start Procedure:"

1. Fuel Selector Valve – SELECT TANK MORE NEARLY FULL (Check to feel detent)
2. Throttle – RETARD
3. Mixture – FULL RICH
4. Auxiliary Fuel Pump – ON until power is regained, then OFF (Leave on if engine driven fuel pump is inoperative.)
5. Throttle – ADVANCE to desired power
6. Mixture – LEAN as required

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	43,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 3	**Last FAA Medical Exam:**	December 1, 2006
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	December 1, 2006
Flight Time:	924 hours (Total, all aircraft), 87 hours (Total, this make and model), 1 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Other flight crew Information

Certificate:	Airline transport; Flight instructor	**Age:**	42,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 3	**Last FAA Medical Exam:**	November 1, 2006
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	November 1, 2006
Flight Time:	3800 hours (Total, all aircraft), 3600 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 70 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N52359
Model/Series:	F33A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	CE-492
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	August 1, 2007 Annual	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	6 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1674 Hrs at time of accident	**Engine Manufacturer:**	Teledyne Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520-BA
Registered Owner:	Safe Air LLC	**Rated Power:**	285 Horsepower
Operator:	Monte S. Crowl	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FKN,41 ft msl	**Distance from Accident Site:**	
Observation Time:	16:01 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.38 inches Hg	**Temperature/Dew Point:**	27°C / 12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Chesapeake, VA (PVG)	**Type of Flight Plan Filed:**	None
Destination:	Chesapeake, VA (PVG)	**Type of Clearance:**	None
Departure Time:	15:10 Local	**Type of Airspace:**	

Airport Information

Airport:	Franklin Municipal Airport FKN	**Runway Surface Type:**	Asphalt
Airport Elevation:	41 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	09	**IFR Approach:**	VOR
Runway Length/Width:	4977 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	36.691665,-76.900276(est)

Administrative Information

Investigator In Charge (IIC):	Cox, Paul
Additional Participating Persons:	Ken Bain; FAA/FSDO; Richmond, VA Mike Gibbons; Hawker-Beechcraft; Wichita, KS
Original Publish Date:	December 3, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=66791