Aviation Investigation Final Report

Location:	SANFORD, Maine	**Accident Number:**	IAD99LA031
Date & Time:	February 27, 1999, 08:00 Local	**Registration:**	N4524Y
Aircraft:	Gulfstream American AA-5B	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was on a local flight to demonstrate the airplane to someone interested in purchasing the same make and model. While on final approach, the airplane lost power and came to rest suspended in a tree during the subsequent forced landing. The Fire Chief responded to the scene. He said, 'The nose was straight down in the trees. The fuel was dripping from the right wing, whether it was running from the left side and dripping from the right, I can't tell you.' Examination of the airplane by a Federal Aviation Administration (FAA) Airworthiness Inspector revealed the left fuel tank was compromised during the accident sequence. The right fuel tank was intact and contained no fuel. The airplane's engine started and ran on the airframe utilizing the airplane's own fuel system. The pilot said that a review of his records revealed the airplane had flown approximately 2-2.5 hours since the last fuel service. The pilot estimated his fuel burn rate averaged 10 gallons per hour. The airplane had a fuel capacity of 26 gallons per wing tank for a total of 52 gallons.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot mismanaged his fuel supply which led to fuel starvation and subsequent loss of engine power.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (C) FLUID,FUEL - STARVATION
2. (C) FUEL MANAGEMENT - INADEQUATE - PILOT IN COMMAND

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

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

Findings
3. OBJECT - TREE(S)

Factual Information

On February 27, 1999, at 0800 eastern standard time, a Gulfstream American AA-5B, N4524Y, was substantially damaged during a forced landing on final approach to the Sanford Regional Airport (SFM), Sanford, Maine. The certificated private pilot and pilot-rated passenger were not injured. Visual meteorological conditions prevailed for the personal flight that originated at Hillsboro, New Hampshire (8B1), approximately 0735. No flight plan was filed for the flight conducted under 14 CFR Part 91.

In telephone interviews, the pilot stated the purpose of the flight was to demonstrate the airplane to the passenger who was interested in purchasing a similar make and model.

The pilot said he drained fuel from the sumps during the preflight inspection and that the fuel was absent of contamination. He said he did not visually check the fuel quantity in the tanks. The pilot said he had flown approximately 1 hour since the last fuel service, which completely filled the tanks. He said, "Both gauges were reading almost full."

The pilot said the flight from 8B1 to SFM was approximately 25 minutes and he entered the traffic pattern for landing. He said he extended the downwind leg to allow for traffic landing ahead of him. The pilot said, "When I entered the downwind leg, I applied carb heat, mixture full rich, and fuel pump on. I'll come in around 1500 RPM and watch my speed. I try to get it down to 60 knots because the Tiger's hard to slow down. Turning final on runway 34, the engine started losing RPM. At about 600 feet I lost power and did a forced landing. I stalled it into a tree."

The chief of the Sanford Fire Department responded to the scene. He said the airplane was suspended in a tree. He said, "The nose was straight down in the trees. The fuel was dripping from the right wing, whether it was running from the left side and dripping from the right, I can't tell you."

The airplane was recovered from the tree by helicopter. Examination of the airplane by a Federal Aviation Administration (FAA) Airworthiness Inspector revealed the left fuel tank was compromised during the accident sequence. The right fuel tank was intact and contained no fuel.

On March 4, 1999, the airplane's engine started and ran on the airframe utilizing the airplane's own fuel system. According to the FAA Inspector, the engine ran "rich" and continued to run after the mixture control lever was moved to the Idle Cut-off position.

In a subsequent telephone conversation, the pilot said that a review of his records revealed the airplane had flown approximately 2-2.5 hours since the last fuel service. The pilot estimated

his fuel burn rate averaged 10 gallons per hour. He said he adjusted the fuel mixture in flight based on exhaust gas temperature (EGT) and cylinder head temperature (CHT) readings. He said, "I watch EGT and CHT. They're both on a digital gauge." The AA-5B had a fuel capacity of 26 gallons per wing tank for a total of 52 gallons.

The pilot was asked if he noted any deficiencies in the performance or flight characteristics of the airplane. He responded, "I've had no problems ever. Never."

The pilot reported 1,973 hours of total flight experience, 156 hours of which were in make and model.

Pilot Information

Certificate:	Private	**Age:**	74,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 1, 1997
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1973 hours (Total, all aircraft), 156 hours (Total, this make and model), 4 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Gulfstream American	**Registration:**	N4524Y
Model/Series:	AA-5B AA-5B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	AA5B1110
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 4, 1998 Annual	**Certified Max Gross Wt.:**	2400 lbs
Time Since Last Inspection:	15 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2141 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-360-A4K
Registered Owner:	CALVIN E. CROOKS	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SFM ,244 ft msl	**Distance from Accident Site:**	
Observation Time:	07:55 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	290°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	-2°C / -13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	HILLSBORO , NH (8B1)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	07:35 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	SANFORD AIRPORT SFM	**Runway Surface Type:**	Asphalt
Airport Elevation:	244 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	32	**IFR Approach:**	None
Runway Length/Width:	5000 ft / 150 ft	**VFR Approach/Landing:**	Traffic pattern

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:**	

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	ARNOLD C SILVERSTONE; PORTLAND , ME
Original Publish Date:	August 3, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45875