Aviation Investigation Final Report

Location:	PANAMA CITY, Florida	**Accident Number:**	MIA98FA237
Date & Time:	September 5, 1998, 10:08 Local	**Registration:**	N534TS
Aircraft:	GLASAIR SH-2R	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Eye witnesses stated that during takeoff, the engine sputtered and seemed to smooth out. The pilot entered a shallow left bank, climbed to about 500 to 600 feet, agl, disappeared from sight behind a tree line, and reemerged in a shallow right bank for a landing in the opposite direction. The pilot overshot the runway centerline, entered a steep bank to correct, and began a descent for landing while still aligning for landing. The airplane was then observed to assume the landing attitude at 50 to 75 feet, agl, and hold that attitude until very hard touchdown left of the grass runway. The three landing gear collapsed, the wings flexed extensively, spewing fuel, and the airplane skidded up onto the runway and burned.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain a proper descent rate during a precautionary landing following a loss of engine power for undetermined reasons.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
2. (C) PROPER DESCENT RATE - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: GEAR COLLAPSED
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Occurrence #4: FIRE
Phase of Operation: LANDING - ROLL

Factual Information

HISTORY OF FLIGHT

On September 5, 1998, about 1008 central daylight time, a Thurston Sumner Glasair SH-2R, N534TS, registered to a private individual, operating as a 14 CFR Part 91 personal flight, crashed while attempting a precautionary landing to Sandy Creek Airpark, Panama City, Florida. Visual meteorological conditions prevailed and no flight plan was filed. The airplane was destroyed, and the private-rated pilot, the sole occupant, sustained fatal injuries. The flight originated from the same airport about 1000, the same day.

According to witnesses who were the pilot's neighbors in the airpark who assembled to watch the newly finished airplane's first flight, the engine was heard to cough and sputter at about 100 feet agl, on takeoff from runway 9. The spectators included the pilot's main helper and neighbor, a pilot/mechanic who was communicating with him by handheld radio, The engine sputter smoothed out and the airplane was observed to enter a shallow left bank at 500 to 600 feet agl, go out of sight beyond a tree line, then reappear and set up for a right base leg to a downwind landing on runway 27. The propeller was turning, but witnesses could not confirm the amount of power the engine was developing. The pilot overshot the runway centerline, entered a steep right bank to correct, brought the nose up to a landing attitude at about 50 to 75 feet agl, and held that attitude until touchdown. The airplane impacted level grass terrain at a high rate of descent about 40 feet left of the runway's left edge, shed the nose landing gear and the left main gear, broke the right main gear, bounced, and slid onto the runway and burned.

Witnesses said the touchdown was very hard and extreme wing flexing was observed. A vapor cloud could be seen emanating from the airplane's lower center section upon touchdown. Some witnesses thought the "cloud" was fuel spewing from a ruptured fuel tank, because fire ignited from that same location as the airplane slid to a stop. Fire quickly spread from the lower firewall area upward to engulf the cockpit. Several of the crowd ran to the burning airplane but were repulsed due to the intense heat. One witness observed the pilot trying to release the canopy latch, but he characterized the effort as "barely". The fire was extinguished by the Calloway Fire Department, using 250 gallons of water.

The previously mentioned main helper/neighbor spoke with the pilot before the flight. He thought the pilot was "really excited" and told him, "calm down before you fly the airplane". He suggested that the pilot, "go up and down the runway four or five times". After the first high speed taxi run, they conferred again about the pilot not getting an airspeed indication, and that the pilot had put 16 gallons aboard, but that the fuel indicator read, "10". The pilot/neighbor blew into the pitot tube with a resultant airspeed indication, and he looked for fuel leaks with negative results to allay the pilot's concerns. He stated, in part, "I told him again, Thurston

we've looked at it a couple times, calm down. This is your last chance, if you want me to fly this thing for you. He gave me a funny look and he went out of there." Additionally, the Bay County Sheriff's Department recorded statements from the main helper/neighbor. Excerpts include, "..while we were building the airplane and he seemed calm and cool and he was very methodic, one-step-at-a-time person. When it was time for him to get in the airplane he was really excited and kind of breathing heavy and we talked about slow down Thurston, go up and down the runway four or five times. Calm down before you fly the airplane." Additional personnel information is included in this report under First Pilot Information and Witness Statements, which are attachments to this report.

PERSONNEL INFORMATION

The pilot had attended the Stoddard-Hamilton factory introductory/flight course in June, 1998, and had logged 1 hour of Glasair flight time and five landings with a company instructor pilot. The pilot's personal logbook lists 1,335 hours total flight time. For the calendar year 1998, the pilot's total logged flight time was 4.0 hours, including 2.1 hours pilot-in-command time.

AIRCRAFT INFORMATION

The flight was the first flight of the homebuilt, experimental airplane. The engine had been bought and stored for use on the project since its major overhaul by Aviation Engines, Inc. of Hueytown, Alabama, on February 21, 1986. After some difficulty with magneto timing, the engine's first ground run, installed on the airplane was on May 6, 1998. The retractable landing gear were pinned down for this first flight in accordance with factory recommendations. The neighbor/builder stated that fuel used for the flight was 87 octane automotive fuel, and that fuel was loaded: 12 gallons in the wing tank, and 4 gallons in the fuselage header tank.

METEOROLOGICAL INFORMATION

Visual meteorological conditions prevailed at the time of the accident. For additional information, see Weather Information on page 4 of this report.

WRECKAGE AND IMPACT INFORMATION

Sandy Creek Airpark is a fly-in community clustered around a single, east-west grass runway about 15 miles southeast of Panama City. The accident occurred near the runway's east end. Scarring of the sod periphery of the runway revealed that initial touchdown of the airplane was in a slightly left wing low, three-point attitude at a high rate of descent, about 675 feet inside the east end and about 40 feet outside the southern edge of the runway on a heading of about 290 degrees, magnetic. The airplane bounced once and shed the nose and left landing gear, spewing fuel from the ruptured fuel tank during the bounce. Brown, recently killed grass at the first ground impact site confirmed that the vapor cloud observed by many

witnesses was fuel spewage. Burned grass along the wreckage path indicated the fire started when the airplane touched down from the bounce. The resultant slide was about 90 feet, ending on the runway, 20 feet inside the southern edge, heading 270 degrees. The fire consumed everything for a diameter of about 7 feet, centered at the firewall, except for the core engine, propeller and spinner, both outer wing panels, the aft fuselage and empennage. A diagram of the wreckage site and runway is attached under, Maps or charts of accident area.

All airframe components were found in the immediate area. Flight controls and airframe components showed no signs of precrash malfunction or failure outside of the 7-foot diameter of fire destruction previously mentioned. The separated landing gear showed overload stress at their respective fracture sites. Severe heat damage to the firewall and aft engine section prevented operational examination of fuel system components, magnetos, ignition harnesses, propeller governor, and hoses. The spark plugs appeared new, electrode gaps proper, and the deposit coloration was sooty black to brown, indicative of a overly rich air to fuel mixture. Propeller blade striations and bending indicated that some power was being developed at ground contact. The induction air box had been crushed, and its air filter was missing. Other than impact related crushing, the induction system and the exhaust system showed no obstructions.

Subsequent disassembly inspection of the engine and associated components was performed. All engine accessories and components were checked for security of mounting hardware and removed. Exact engine to magneto timing was impossible, but magneto firing-order-to-piston stroke/valve relationship was checked, and was proper for both magnetos. The left magneto was found installed with the timing slot adjustment counter clockwise to the full limit of left travel. The right magneto was installed at about the center position of the timing slot. The full rocker arm, valve, and gear train was intact, correctly installed, and a thumb compression check of each cylinder was good. The carburetor was relatively undamaged, and showed a fully open throttle valve, the mixture control at midrange, and a small amount of 87 octane automotive fuel. Water content testing of the fuel was negative and the fuel inlet screen was clean. The propeller governor sustained fire damage, but the drive coupling was intact and the gasket screen was clean. The oil filter revealed no contamination and no lubrication system abnormalities were found. No evidence of preimpact mechanical malfunction was noted.

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examination of the pilot was conducted by Dr. Thomas R. Beaver, M. D., Associate Medical Examiner, District 14, Panama City, Florida, on August 8, 1998. The cause of death was attributed to conflagration. No findings that could be considered causal were noted. Toxicological tests were conducted at the Federal Aviation Administration Research Laboratory, Oklahoma City, Oklahoma, and by the University of Florida Diagnostic Referral Laboratories. Ethanol was positive in urine, postmortem, and negative in blood. Carbon monoxide was positive in blood at a level of 21per cent. Salicyclic acid was detected in blood and urine at a level of 44 miligrams/liter.

TESTS AND RESEARCH

The plastic fueling cans in the pilot's hangar, reported to be those used for fueling of the airplane, were examined and found to be free of water and contamination. It was confirmed that the type of fuel was 87 octane automotive fuel.

ADDITIONAL INFORMATION

The aircraft wreckage, minus the engine and propeller assembly, was released to the estate of the operator on September 7, 1998. The engine and propeller assembly was released to the operator's insurance representative on January 22, 1999.

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:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	December 4, 1997
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1800 hours (Total, all aircraft), 1 hours (Total, this make and model), 1335 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	GLASAIR	**Registration:**	N534TS
Model/Series:	SH-2R SH-2R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	534
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	July 24, 1998 Continuous airworthiness	**Certified Max Gross Wt.:**	2100 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320-D1A
Registered Owner:	THURSTON W. SUMNER	**Rated Power:**	160 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:	PFN ,21 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	300°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	80°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	32°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(75FL)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	10:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	SANDY CREEK AIRPARK 75FL	**Runway Surface Type:**	Grass/turf
Airport Elevation:	13 ft msl	**Runway Surface Condition:**	Dry;Soft
Runway Used:	27	**IFR Approach:**	None
Runway Length/Width:	3800 ft / 150 ft	**VFR Approach/Landing:**	Precautionary landing;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	30.199829,-85.509399(est)

Administrative Information

Investigator In Charge (IIC):	Stone, Alan
Additional Participating Persons:	GEORGE A COLBOW; BIRMINGHAM , AL
Original Publish Date:	March 30, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=43838

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