Aviation Investigation Final Report

Location:	SCOTT, Arkansas	**Accident Number:**	FTW99LA017
Date & Time:	October 29, 1998, 09:00 Local	**Registration:**	N9956U
Aircraft:	Grumman American AA-5A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Following a total loss of engine power during the en route descent to the destination airport, the aircraft landed short of the runway. During the landing flare, the airplane stalled, bounced, landed on the main landing gear and nosed over. The aircraft had flown 852 hours since the last engine overhaul and 13 hours since the last annual inspection. Examination of the engine revealed a lack of gear train continuity. Disassembly of the engine accessory case revealed that the crankshaft gear lockplate was not installed and the crankshaft gear retaining bolt had backed out of the crankshaft approximately 1 3/4 turns. The crankshaft gear alignment dowel was fractured. Review of maintenance records indicated the engine was last overhauled in January 1987 and return to service by a FAA certified mechanic.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The disengagement of the crankshaft gear due to the maintenance personnel not installing the gear lockplate at the last engine overhaul, resulting in the loosening of the gear retaining bolt, and the subsequent fracture of the gear alignment dowel. A factor was the pilot's inadvertent stalling of the aircraft during the forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: DESCENT - EMERGENCY

Findings
1. (C) MISCELLANEOUS,BOLT/NUT/FASTENER/CLAMP/SPRING - NOT INSTALLED
2. (C) MAINTENANCE,OVERHAUL - INADEQUATE - OTHER MAINTENANCE PERSONNEL
3. (C) MISCELLANEOUS,BOLT/NUT/FASTENER/CLAMP/SPRING - LOOSE
4. (C) MISCELLANEOUS,DOWEL/PIN - FRACTURED
5. (C) ENGINE ASSEMBLY,GEAR - DISENGAGED

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

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
6. (F) STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #4: NOSE OVER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Factual Information

On October 29, 1998, at 0900 central daylight time, a Grumman American AA-5A single engine airplane, N9956U, owned and operated by the pilot under Title 14 CFR Part 91, sustained substantial damage during a forced landing following a total loss of engine power. The private pilot and one of the passengers received minor injuries and the second passenger sustained serious injuries. Visual meteorological conditions prevailed for the personal cross country flight that departed Greenville, Mississippi, at 0800. A flight plan was not filed.

During a telephone interview, conducted by the investigator-in-charge (IIC), the pilot reported that the flight departed Greenville with 3 hours of fuel aboard for the planned one hour flight to Little Rock, Arkansas. During the en route descent approximately 10 miles east of the destination airport, the "engine quit." The propeller continued windmilling. The Little Rock Control Tower provided vectors; however, the airplane landed short of the airport. During the landing flare the airplane stalled, bounced, landed on the main landing gear, and subsequently nosed over. The pilot, who had owned the airplane for 5 years, had flown the airplane 13 hours since the last annual inspection with no discrepancies noted.

The local authorities and the FAA inspectors responding to the site reported that the airplane came to rest in a bean field after collapsing the nose gear and right main landing gear. Structural damage occurred to the lower engine cowling and fuselage. The left main gear was found separated from the airplane. The propeller blades were bent aft toward the engine cowling and an engine mount was found separated. The cockpit tachometer reading was 1460.63 hours.

The FAA inspector's and the engine manufacturer representative's examination and disassembly of the engine at Clinton, Arkansas, revealed a lack of gear train continuity. Disassembly of the engine accessory case revealed that the crankshaft gear lockplate was not installed and the crankshaft gear retaining bolt had backed out of the crankshaft approximately 1 3/4 turns. The crankshaft gear alignment dowel was fractured. The crankshaft gear did not appear to have been modified according to Airworthiness Directive (AD) 91-14-22 and the Textron Lycoming Service Bulletin (SB) No. 475B. The AD and the SB require the crankshaft gear modification during engine overhaul. See the enclosed report for details of the teardown examination.

A review of the maintenance records by the IIC did not reveal that the AD or SB had been accomplished. The tachometer reading at the annual inspection on August 20, 1998, was 1,448.4 hours. The aircraft had flown 852 hours since the last engine overhaul in January 1987 and return to service by a FAA certified mechanic.

Pilot Information

Certificate:	Private	**Age:**	42,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-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 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	November 7, 1996
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	764 hours (Total, all aircraft), 314 hours (Total, this make and model), 659 hours (Pilot In Command, all aircraft), 16 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Grumman American	**Registration:**	N9956U
Model/Series:	AA-5A AA-5A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	AA5A-0356
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	August 20, 1998 Annual	**Certified Max Gross Wt.:**	2200 lbs
Time Since Last Inspection:	13 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1463 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320-E2G
Registered Owner:	CHEETAH AVIATION, INC.	**Rated Power:**	150 Horsepower
Operator:	COLLINS E. BRENT	**Operating Certificate(s) Held:**	None
Operator Does Business As:	CHEETAH AVIATION, INC.	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	LIT ,260 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Scattered / 12000 ft AGL	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	21°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	GREENVILLE , MS (GLH)	**Type of Flight Plan Filed:**	None
Destination:	LITTLE ROCK , AR (LIT)	**Type of Clearance:**	
Departure Time:	08:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	Dry;Vegetation
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 2 Minor	**Latitude, Longitude:**	34.679615,-92.119522(est)

Administrative Information

Investigator In Charge (IIC):	Roach, Joyce
Additional Participating Persons:	EDWIN E MILLISER; LITTLE ROCK , AR GERALD R JAMES; WILLIAMSPORT , PA
Original Publish Date:	February 16, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45169