



National Transportation Safety Board Aviation Accident Final Report

Location:	Fort Pierce, FL	Accident Number:	ATL03FA147
Date & Time:	09/25/2003, 1126 EDT	Registration:	N70258
Aircraft:	Grumman HU-16C	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal, 1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

According to the pilot, during climb-out from runway 09 at an altitude of approximately 500 feet the right engine warning red magnetic chip detector light illuminated. The pilot decided to shut down the right engine and return to the airport. Shortly after making that decision the left engine began to lose power. The airplane was unable to maintain altitude, and the pilot prepared to make an off-airport emergency landing in a field. The airplane collided with the trees as the pilot maneuvered for the emergency landing. Examination of the airframe, and flight controls revealed no anomalies. Examination of the left and right engine revealed no mechanical anomalies. Examination of cockpit fuel selector controls revealed that the left engine fuel selector handle was in the off position and the right engine fuel selector handle was set in the left tank position. During the in-flight engine secure procedures the pilot is required to place the inoperative engine fuel selector in the off position

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the pilot placing the fuel selector in the off position which resulted in fuel starvation to the left engine, after the pilot intentionally shut down the right engine.

Findings

Occurrence #1: LOSS OF ENGINE POWER

Phase of Operation: CLIMB

Findings

1. ALL ENGINES
2. ENGINE SHUTDOWN - INTENTIONAL - PILOT IN COMMAND
3. (C) IN-FLIGHT PLANNING/DECISION - PILOT IN COMMAND
4. (C) FUEL TANK SELECTOR POSITION - IMPROPER USE OF - PILOT IN COMMAND
5. FUEL SYSTEM - STARVATION

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: DESCENT - EMERGENCY

Findings

6. (F) OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On September 25, 2003, at 1126 eastern standard time, a Grumman HU-16C, N70258, registered to Corsair Aviation Holdings Inc. and operated by an airline transport pilot, collided with a stand of trees during an emergency landing in the vicinity of the St. Lucie International Airport, Ft. Pierce, Florida. The personal flight was operated under the provisions of Title 14 Part 91 with no flight plan filed. Visual meteorological conditions prevailed at the time of the accident and the airplane sustained substantial damage. The airline transport pilot received minor injuries. The airline transport rated passenger and passenger were fatally injured. The flight departed the St. Lucie International Airport, on September 25, 2003, at 1120.

According to the pilot, during climb-out from runway 09, all engine indications were normal. At an altitude of approximately 500 feet the right engine warning red magnetic chip detector light illuminated. The pilot performed the engine out procedure, informed the pilot-rated passenger that they would be returning to the departure airport, instructed the pilot-rated passenger to assist in the turn, delay the feathering procedure and continue to use the right engine at 2000 rpm. During the turn the pilot made a "PAN" call to Air Traffic Control (ATC) to report the urgency of the situation. After turning downwind the pilot instructed the pilot-rated passenger to feather the engine, which he completed after both pilots confirmed the correct engine would be feathered.

Shortly after making that decision the left engine began to lose power. The pilot informed the control tower that he would make an attempt to land on runway 14, but could not make a left turn to intercept the runway and would attempt to land on runway 09. The pilot instructed the pilot-rated passenger to re-start the right engine, but the airplane was down to 300 feet and at the minimum control speed of 85 knots.

The pilot prepared to make an off-airport emergency landing in a field. The airplane collided with the trees as the pilot maneuvered for the emergency landing.

PERSONNEL INFORMATION

Review of the pilot's records revealed the pilot held an airline transport certificate issued on February 09, 1999, with ratings for multiengine land, multiengine sea, and single engine sea. The pilot held a second-class medical issued on September 18, 2003, with the restriction "valid when wearing corrective lenses". The pilot accumulated a total 450 in the HU-16C, and completed his biennial flight review on March 30, 2003.

Review of the pilot-rated passenger records revealed the he held an airline transport certificate issued on April 22, 2002, with ratings for single-engine land, multiengine land, Single-engine Sea, multiengine sea, and rotorcraft-helicopter. The pilot-rated passenger held a first class medical certificate issued August 21, 2003, with the restriction "valid when wearing corrective lenses".

AIRCRAFT INFORMATION

Review of the records for the Grumman HU-16 revealed that the last service inspection "A" was performed on September 25, 2003. The transponder, altitude, and static pressure system tests and inspections were performed on May 27, 2003.

WRECKAGE AND IMPACT INFORMATION

Examination of the wreckage revealed the airplane came to rest on a 270-degree heading 3 miles northwest of the St. Lucie International Airport, Ft. Pierce, Florida. Approximately 10 feet of the outboard left wing was sheared off. The right fuel pod was located forward of the fuselage in a run-off stream. The fuselage was broken off aft of the landing gear, and came to rest on top of the right wing with horizontal and vertical stabilizer still attached. The right wing was attached to the fuselage and had leading edge crush damage. The right engine was attached to the wing, and the right engine propeller was located 20 feet forward of the fuselage. The cockpit and cabin section of the fuselage displayed heavy crush damage. The left engine was attached to the left wing with the propeller still attached to the engine.

Examination of cockpit fuel selector controls revealed that the left engine fuel selector handle was in the off position and the right engine fuel selector handle was set in the left tank position. Further examination of the fuel selector handles revealed the fixed stop detents were operational.

Examination of the left wing exhibited, leading edge crush damage throughout the span of the wing. The outboard left wing section was separated outboard of the left engine. The fuel tanks on the left side were ruptured. Flight control cables were connected to the left aileron quadrant and frayed at the ends of separation. Cables located at the left wing separation were traced to the center section quadrant and forward to the control yokes. Left engine control cables were traced from the connections on the engine to the cockpit control handle connections in the overhead console. The left engine was removed for further examination.

Rudder and elevator cables were traced from the control yokes to the cabin section separation. The cables were broken at the separations in the cabin. The remainder of the elevator and rudder cables was located in the aft section of the fuselage. The cables were also frayed at the separation point.

Examination of the right wing revealed, approximately 221 gallons of fuel was drained from the main fuel tanks. The right wing was attached to the fuselage with aileron and flaps attached to the wing. The right flap exhibited crush damage and was stowed in the up position. The right wing flight control cables were traced from the right aileron quadrant to the center section quadrant and forward to the control yokes. Right engine control cables were traced to the cockpit control handles in the overhead console. The right engine was removed for further examination. The right wing fuel pod was still attached to the wing.

Examination of the left engine revealed, the main oil screens, and magnetic chip detector was free of ferrous material. Numbers 3, 4 and 5 front and rear spark plugs were oil fouled, when cleaned and tested they exhibited spark. All other spark plugs exhibited spark when tested. The left engine cylinder compression was checked. The left engine fuel pump was flow tested and produced flow capacity and pressure, and no anomalies were noted. The left engine carburetor was tested and no anomalies were noted. Both magnetos were removed for examination; the right magneto was run at 2000 rpm and produced 2.5 amps. The left magneto was run at 2000 rpm and produced 2.5 amps. The right magneto was timed at 20-degrees and the left magneto was timed at 23-degrees. Examination of the left three bladed propeller assembly exhibited all three blades were bent aft.

Examination of the right engine revealed that the nose case was broken off. The forward spline of the crankshaft was broken off. Metal filings were found in the main engine oil screen and

throughout the lubricating system. The magnetic chip detector exhibited metal filings on the pick-up. The master rod bearing showed signs of scoring. The right engine propeller was broken off at the nose case, and the propeller was in the feathered positioned.

ADDITIONAL INFORMATION

Review of the NAVAIR 01-85AC-1, Section I, Part 2: Fuel Tank Selectors revealed. Two spring-loaded stops and a fixed stop are installed on the face of each fuel tank selector dial. The spring-loaded stops must be depressed with a finger in order to turn handle. One spring stop prevents the handle from being moved inadvertently into the OFF position from the MAIN TANK (Right or LEFT) position, thereby cutting off fuel to the engines, and also prevents it from being moved out of the OFF position to the MAIN TANK position. The other spring loaded stop prevents the handle from being moved into the AUX TANK position from the MAIN TANK position.

The fixed stop prevents the fuel tank selector handle from being moved from the AUX TANK position directly to the OFF position. The handle can be moved freely between the MAIN TANK and the RIGHT and LEFT TANKS position. During the in-flight engine secure procedures the pilot is required to place the inoperative engine fuel selector in the off position.

Oil samples were sent to Metallurgical, Inc. for spectrometric oil analysis for the left and right engine, and "wear metals are within normal limits".

The wreckage of the Grumman HU-16C, N70258 was released to CTC Services Aviation (LAD Inc.) on March 12, 2004.

Pilot Information

Certificate:	Airline Transport; Commercial	Age:	53, Male
Airplane Rating(s):	Multi-engine Land; Multi-engine Sea; Single-engine Land; Single-engine Sea	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	09/18/2003
Occupational Pilot:		Last Flight Review or Equivalent:	03/30/2003
Flight Time:	13000 hours (Total, all aircraft), 450 hours (Total, this make and model), 600 hours (Pilot In Command, all aircraft), 60 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	Age:	56, Male
Airplane Rating(s):	Multi-engine Land; Multi-engine Sea; Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	08/21/2003
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	12800 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Grumman	Registration:	N70258
Model/Series:	HU-16C	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Restricted	Serial Number:	141271
Landing Gear Type:	Retractable - Amphibian; Tricycle	Seats:	10
Date/Type of Last Inspection:	09/22/2003, Continuous Airworthiness	Certified Max Gross Wt.:	33500 lbs
Time Since Last Inspection:	4276 Hours	Engines:	2 Reciprocating
Airframe Total Time:	4276 Hours as of last inspection	Engine Manufacturer:	Wright
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	43D50
Registered Owner:	Corsair Aviation Holdings Inc	Rated Power:	1425 hp
Operator:	Corsair Aviation Holdings Inc	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	FPR, 23 ft msl	Distance from Accident Site:	3 Nautical Miles
Observation Time:	1353 EST	Direction from Accident Site:	330°
Lowest Cloud Condition:	Few / 1200 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 15000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	120°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.98 inches Hg	Temperature/Dew Point:	27° C / 23° C
Precipitation and Obscuration:			
Departure Point:	FORT PIERCE, FL (FPR)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	VFR
Departure Time:	1120 EDT	Type of Airspace:	Class E

Airport Information

Airport:	ST LUCIE COUNTY INTL (FPR)	Runway Surface Type:	Asphalt
Airport Elevation:	23 ft	Runway Surface Condition:	Dry
Runway Used:	09	IFR Approach:	None
Runway Length/Width:	6492 ft / 150 ft	VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Minor	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal, 1 Minor	Latitude, Longitude:	27.495000, -80.368056

Administrative Information

Investigator In Charge (IIC):	Eric H Alleyne	Report Date:	04/28/2005
Additional Participating Persons:	Frank V Lipinski; Orlando FSDO; Orlando, FL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).