Aviation Investigation Final Report

Location:	Okeechobee, Florida	**Accident Number:**	ERA13LA118
Date & Time:	January 26, 2013, 07:58 Local	**Registration:**	N9041U
Aircraft:	HILLER-TRI-PLEX IND.INC. UH-12B	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	3 Minor
Flight Conducted Under:	Part 91: General aviation - Aerial observation		

Analysis

While airborne hunting, the pilot was maneuvering the helicopter at low altitude when the engine experienced a partial loss of power. During the subsequent forced landing, the helicopter struck trees and was substantially damaged. Postaccident examinations of the engine and airframe revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. The atmospheric conditions at the time of the accident were conducive to serious carburetor icing at cruise power. During a postaccident interview, the pilot reported that he did not monitor the carburetor temperature or use the engine carburetor heat during the flight or subsequent to the engine power degradation. Therefore, it is likely that the carburetor accumulated ice, which subsequently resulted in a partial loss of engine power.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to monitor carburetor temperature and use carburetor heat in conditions conducive to serious carburetor icing, which resulted in partial loss of engine power.

Findings

Personnel issues	Use of equip/system - Pilot
Environmental issues	Conducive to carburetor icing - Contributed to outcome
Aircraft	Fuel control/carburetor - Incorrect use/operation

Factual Information

History of Flight

Maneuvering-hover	Loss of engine power (partial) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On January 26, 2013, about 0758 eastern standard time, a Hiller-Tri-Plex Industries Inc. UH-12B, N9041U, operated by Florida Helicopter Adventures LLC., was substantially damaged when it impacted trees and then terrain, following a partial loss of engine power while maneuvering, near Okeechobee, Florida. The airline transport pilot and his two passengers received minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the local revenue aerial observation flight conducted under 14 Code of Federal Regulations Part 91.

According to the pilot, on the morning of the accident, he started and warmed up the helicopter and then checked the controls prior to loading the passengers. After loading his passengers, He lifted off and then flew to the north side of the property he was operating from to shoot Feral Hogs. After arriving at the north side, he began a parallel grid search tracking east to west and from north to the south, just above a wooded area. On the second or third east to west pass, the passenger seated on his left observed some hogs inside the edge of the wooded area. The pilot then maneuvered the helicopter toward the area that the passenger had indicated the hogs were. The engine and rotor speed which was indicted in revolutions per minute (rpm) then "faded a bit" and the pilot lowered collective and added throttle to recover rpm. He then heard a couple of "pops" and the engine rpm started "slightly decaying". At this point he was able to fly the helicopter with partial power away from some very tall trees and toward a clearer area in a shallow decent.

The rotor rpm remained within the "green / yellow area" on the tachometer and "all gauges were in the green". As he was barely above the trees (approximately 10 feet), he elected to keep the aircraft under control and settle into the trees with as low descent rate as possible.

Upon contact with the trees the main rotor blades broke apart and separated from the helicopter, and the helicopter fell nose first 20-30 feet and impacted the ground. The passenger seated to his left then egressed through the windshield area which had shattered on impact and the passenger seated to his right egressed through the right cabin door. Both passengers then assisted the pilot to egress through the right cabin door.

PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) and pilot records, the pilot held an airline transport pilot certificate with multiple ratings including commercial privileges for rotorcraft-helicopter. His most recent FAA first-class medical certificate was issued on June 26, 2012. He reported 5,000 total hours of flight experience with 1,600 total hours in rotorcraft and 50 total hours in the accident helicopter make and model.

AIRCRAFT INFORMATION

The accident aircraft was a three place helicopter of conventional construction. It was powered by a carburetor equipped Franklin 6V-350-B, 235 horsepower, air cooled, horizontally opposed engine.

According to FAA and maintenance records the helicopter was manufactured in 1951. The helicopter's most recent annual inspection was completed on March 9, 2012. At the time of the inspection, the helicopter had accrued 2531.6 total hours of operation.

METEOROLOGICAL INFORMATION

The recorded weather at Okeechobee County Airport (OBE), located approximately 7 nautical miles southwest of the accident site, at 0755, included: wind calm, visibility 10 miles, sky clear, temperature 10 degrees C, dew point 8 degrees C, and an altimeter setting of 30.26 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

Examination of the accident site revealed that the helicopter had come to rest inverted in a stand of trees with the nose pointed down towards the ground and the tail leaning against a 20 foot high tree.

Examination of the wreckage revealed no evidence of any preimpact mechanical malfunction or failure of the helicopter, the engine, transmission, main rotor, or tail rotor.

The main rotor blades were shattered, one blade was broken off of the tail rotor, and the tail boom was broken off approximately 3 and 1/2 feet inboard of the tail rotor.

TESTS AND RESEARCH

Carburetor Icing

A review of FAA Special Airworthiness Information Bulletin (SAIB) CE-09-35 revealed however, that the recorded temperature and dew point conditions about the time of the accident were favorable for serious carburetor icing at cruise power.

Carburetor Heat Control

Review of systems information revealed that the helicopter was equipped with a free air temperature gauge, a carburetor air temperature gauge, and a carburetor heat control to maintain desired carburetor air temperature.

Review of the Hiller Model UH-12B Helicopter Flight Manual (HFM) revealed that the carburetor heat control was mounted on the quadrant, located on the tunnel, forward of the center seat, adjacent to the mixture control. Pulling the handle fully aft would introduce the maximum amount of heated air into the carburetion system, and the handle could be placed in any intermediate position between full forward for cold air, and full aft for heated air.

Further review of the HFM also revealed that in order to prevent the development of carburetor ice the pilot should "apply sufficient carburetor heat to maintain a carburetor air temperature of 25 degrees C to 50 degrees C". The HFM also contained a "NOTE" that stated that "Carburetor icing will be indicated by a loss of manifold pressure followed by a drop in engine rpm" and also advised to "Use carburetor heat as prescribed for local conditions".

Post accident interviews revealed however, that the pilot did not activate the carburetor air heat control.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Center
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	June 26, 2012
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 10, 2011
Flight Time:	5000 hours (Total, all aircraft), 50 hours (Total, this make and model), 4500 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	HILLER-TRI-PLEX IND.INC.	**Registration:**	N9041U
Model/Series:	UH-12B	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	359
Landing Gear Type:	Skid	**Seats:**	3
Date/Type of Last Inspection:	March 9, 2012 Annual	**Certified Max Gross Wt.:**	2500 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2532 Hrs as of last inspection	**Engine Manufacturer:**	Franklin
ELT:	Not installed	**Engine Model/Series:**	6V-350-B
Registered Owner:	Kenneth C. Fabel	**Rated Power:**	235 Horsepower
Operator:	Florida Helicopter Adventures LLC.	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	OBE,33 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	07:55 Local	**Direction from Accident Site:**	225°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.26 inches Hg	**Temperature/Dew Point:**	10°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Okeechobee, FL	**Type of Flight Plan Filed:**	None
Destination:	Okeechobee, FL	**Type of Clearance:**	None
Departure Time:	07:30 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Minor	**Latitude, Longitude:**	27.376111,-80.791664(est)

Administrative Information

Investigator In Charge (IIC):	Gunther, Todd
Additional Participating Persons:	William Edwards; FAA FSDO; Orlando, FL
Original Publish Date:	December 11, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=86088