Aviation Investigation Final Report

Location:	Huntsville, Texas	**Accident Number:**	CEN16LA003
Date & Time:	October 5, 2015, 08:05 Local	**Registration:**	N160CS
Aircraft:	Bell 47G	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Minor
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The commercial pilot was conducting an agricultural application flight in the helicopter. He reported that the helicopter felt "awkward" during the spray pass shortly before the event but that he thought that it was due to an uncoordinated turn. During the next spray pass, the helicopter developed a right rolling tendency, which the pilot was initially able to counter with left cyclic control. He then entered a right turn with the intention of returning to the fuel truck. Once the right turn was initiated, he applied full left and aft cyclic control input but the helicopter did not respond. The helicopter began to lose altitude, impacted the ground, and then came to rest in an open field covered with low vegetation.

The pilot reported that he did not feel any abnormal vibrations or hear any "pops" before the loss of control authority. He added that the flight went from routine to out of control in a matter of "seconds." A postaccident examination of the helicopter revealed no evidence of preimpact failures or malfunctions; however, the extent of damage to the flight control system precluded a complete examination.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's loss of helicopter control during an agricultural application pass for reasons that could not be determined due to the extent of damage to the flight control system.

Findings

Personnel issues	Aircraft control - Pilot
Not determined	(general) - Unknown/Not determined
Aircraft	(general) - Not attained/maintained

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

On October 5, 2015, about 0805 central daylight time, a Bell 47G-3B helicopter, N160CS, sustained substantial damage when it impacted terrain during an aerial application pass near Huntsville, Texas. The pilot sustained minor injuries. The helicopter was registered and operated by Custom Air LLC under the provisions of 14 Code of Federal Regulations Part 137 as an agricultural application flight. Day visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The local flight originated from a temporary landing site near the application field shortly before the accident.

The pilot reported that the helicopter felt "awkward" shortly before the event, but thought it was due to an uncoordinated turn. During the next spray pass, the helicopter developed a right rolling tendency, which the pilot was initially able to counter with left cyclic control. He entered a "gentle" right turn with the intention of returning to the fuel truck for a precautionary landing. However, full left cyclic control input was ultimately ineffective in countering the right rolling tendency. The right turn continued for about 150 degrees of heading change. The helicopter began to lose altitude during the turn and subsequently impacted the ground in a slight right bank, traveling about 40 yards before coming to rest. The pilot stated that he did not feel any abnormal vibrations or hear any "pops" before the loss of control authority. He commented that the flight went from routine to out of control in a matter of "seconds."

The helicopter came to rest in an open field covered with low vegetation. A postaccident examination was conducted by Federal Aviation Administration inspectors. The windshield/canopy had separated from the fuselage, with plexiglass fragments observed at the accident site. The forward fuselage structure exhibited minor deformations and distortions; however, the integrity of the fuselage was intact. The main rotor blades remained attached to the hub; however, the rotor blades were deformed over the span of the blades. The rotor hub remained attached to the mast and transmission. The transmission and supporting structure were dislocated from the aft fuselage/forward tailboom truss structure. The fuel tanks were separated and located with the main wreckage. The tailboom was deformed. The tail rotor transmission had separated from tail boom and was located at the accident site. The tail rotor blades remained attached to the hub. The blades exhibited tip damage but appeared otherwise intact. The flight control system components were deformed and fragmented consistent with the overall impact damage.

The postaccident examination did not reveal any anomalies consistent with a preimpact failure or malfunction; however, the examination was hindered by the extent of the damage.

Pilot Information

Certificate:	Commercial	**Age:**	25,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	March 19, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 17, 2015
Flight Time:	844 hours (Total, all aircraft), 106 hours (Total, this make and model), 683 hours (Pilot In Command, all aircraft), 192 hours (Last 90 days, all aircraft), 54 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N160CS
Model/Series:	47G 3B	**Aircraft Category:**	Helicopter
Year of Manufacture:	1962	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	2768
Landing Gear Type:	N/A; Skid	**Seats:**	2
Date/Type of Last Inspection:	September 20, 2015 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	20 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	15259.1 Hrs as of last inspection	**Engine Manufacturer:**	Rolls Royce
ELT:	Not installed	**Engine Model/Series:**	T63-A-700
Registered Owner:	Custom Air LLC	**Rated Power:**	250 Horsepower
Operator:	Custom Air LLC	**Operating Certificate(s) Held:**	Agricultural aircraft (137)
Operator Does Business As:		**Operator Designator Code:**	U9QG

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	UTS,363 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	07:53 Local	**Direction from Accident Site:**	262°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.06 inches Hg	**Temperature/Dew Point:**	18°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Huntsville, TX	**Type of Flight Plan Filed:**	None
Destination:	Huntsville, TX	**Type of Clearance:**	None
Departure Time:	07:50 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	30.707221,-95.287223(est)

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Mark C Hopp; FAA Flight Standards; Houston, TX
Original Publish Date:	January 18, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92113