



Aviation Investigation Final Report

Location:	Spanish Fork, Utah	Accident Number:	WPR16LA155
Date & Time:	August 1, 2016, 18:50 Local	Registration:	N234AV
Aircraft:	Beech C 99	Aircraft Damage:	Substantial
Defining Event:	Miscellaneous/other	Injuries:	1 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The commercial pilot of the scheduled cargo flight reported that, during cruise flight about 8,000 ft indicated altitude, he heard a small impact noise and believed that the airplane was struck by a bird. There was no loss of directional control, change in control configuration, or impact shudder. He continued the flight and subsequently landed without further incident. After exiting the airplane, the pilot noticed that about 12 inches of the top of the vertical stabilizer was missing, and that there was substantial damage to the rudder.

The separated top of the vertical stabilizer section was not recovered. The fracture surface of the upper section of the remaining vertical stabilizer was in a nearly horizontal plane. The skin was deformed adjacent to the fracture into curled rolls turning downward and aft. Some areas were crushed, consistent with the vertical stabilizer moving forward relative to another object. Sliding contact marks were observed at the leading edges, vertical spars, and deformed faces of the skin panel adjacent to the fracture. No evidence of any biological or manufactured foreign material transfer was observed associated with any of the fracture surfaces either visually or under optical magnification. Closer examination identified deposits of particles consistent with aluminum alloy 2024 and similar metallic element peaks. Other particles had spectra consistent with a low alloy steel, stainless steel, brass, and a nickel-base alloy with iron and chromium. The curling deformation to the skin and the deformation through the airplane structure was consistent with contact with a stationary object, such as a suspended cable. Given the diameter of the impact deformation and the materials found, it is likely that the airplane impacted overhead power transmission lines during a portion of the flight that was conducted at an altitude much lower than reported.

Probable Cause and Findings

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

An in-flight collision with power lines.

Findings

Personnel issues	Monitoring environment - Pilot
Environmental issues	Wire - Effect on operation

Factual Information

History of Flight

Enroute-climb to cruise	Miscellaneous/other (Defining event)
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On August 1, 2016, about 1850 mountain daylight time, a twin-engine turboprop Beech C-99 airplane, N234AV, collided with an object while in-flight near Spanish Fork, Utah. The commercial pilot was not injured. The airplane sustained substantial damage to the vertical stabilizer and rudder. The airplane was registered to UAS Trans Services and operated as AMF1843 by Ameriflight, LLC as a Title 14 *Code of Federal Regulations* Part 135 scheduled cargo flight. Visual meteorological conditions were reported at the time of the accident, and company flight following procedures were in effect. The flight originated from Carbon County Regional Airport (PUC), Price, Utah about 1830 and was destined for Salt Lake City, Utah.

The pilot reported that while about 8,000 - 8,500 ft indicated altitude, he heard a small impact noise and believed that the airplane was struck by a bird. There was no loss of directional control, change in control configuration, or impact shudder. He continued the flight and subsequently landed without further incident. After exiting the airplane, the pilot noticed about 12 inches of the top of the vertical stabilizer was missing, and there was substantial damage to the rudder.

The separated top of the vertical stabilizer section was not recovered. A section of the remaining upper area of the vertical stabilizer, rudder and the rudder trim were removed from the airplane and sent to the National Transportation Safety Board Materials Laboratory, Washington DC for examination. The materials engineer reported that the pieces were fractured in a nearly horizontal plane at the upper ends of the submitted pieces. The skin on the vertical stabilizer and rudder were deformed adjacent to the fracture into curled rolls turning downward and aft. Some areas were crushed consistent with the vertical stabilizer moving forward relative to another object. Sliding contact marks were observed at the leading edges, vertical spars, and deformed faces of the skin panel adjacent to the fracture. No evidence of any biological or manufactured foreign material transfer was observed associated with any of the fracture surfaces as observed visually and under optical magnification. Closer examination using a scanning electron microscope (SEM) with energy dispersive x-ray spectroscopy (EDS) identified deposits of particles consistent with aluminum alloy 2024, and similar metallic element peaks. Other particles had spectra consistent with a low alloy steel, stainless steel, brass, and a nickel-base alloy with iron and chromium.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	22, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	March 25, 2016
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 25, 2016
Flight Time:	1434 hours (Total, all aircraft), 177 hours (Total, this make and model), 845 hours (Pilot In Command, all aircraft), 177 hours (Last 90 days, all aircraft), 24 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N234AV
Model/Series:	C 99 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	1986	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	U-234
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	July 5, 2016 AAIP	Certified Max Gross Wt.:	11300 lbs
Time Since Last Inspection:	34 Hrs	Engines:	2 Turbo prop
Airframe Total Time:	28737.5 Hrs at time of accident	Engine Manufacturer:	Pratt & Whitney
ELT:	C91 installed, not activated	Engine Model/Series:	PT6A-36
Registered Owner:	UAS TRANSERVICES INC	Rated Power:	750 Horsepower
Operator:	AMERIFLIGHT INC	Operating Certificate(s) Held:	Commuter air carrier (135)
Operator Does Business As:		Operator Designator Code:	JIKA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KPVU, 4497 ft msl	Distance from Accident Site:	16 Nautical Miles
Observation Time:	18:50 Local	Direction from Accident Site:	318°
Lowest Cloud Condition:	Scattered / 12000 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 14000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	20°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.03 inches Hg	Temperature/Dew Point:	31°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	PRICE, UT (PUC)	Type of Flight Plan Filed:	Company VFR
Destination:	Salt Lake City, UT (SLC)	Type of Clearance:	None
Departure Time:	18:30 Local	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	40.018333,-111.48278(est)

Administrative Information

Investigator In Charge (IIC):	Shaver, Christopher
Additional Participating Persons:	Jeffery L Smith; FAA Salt Lake FSDO; Salt Lake City, UT
Original Publish Date:	September 11, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=93734

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).