Aviation Investigation Final Report

Location:	Fairbanks, Alaska	**Accident Number:**	ANC16LA067
Date & Time:	September 16, 2016, 08:20 Local	**Registration:**	N6464V
Aircraft:	Helio H 295	**Aircraft Damage:**	Substantial
Defining Event:	Landing gear collapse	**Injuries:**	2 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The airline transport pilot was departing from a remote unimproved airstrip. He stated that, as he initiated the takeoff, everything seemed normal. About 300 ft into the takeoff roll, the airplane veered sharply left, exited the airstrip, and impacted brush and trees, which resulted in substantial damage to the fuselage and left horizontal stabilator. A postaccident examination of the airplane revealed that the tailwheel had separated from its attachment point and folded underneath the empennage.

Visual and magnified optical examinations revealed deformation and fracture patterns consistent with an overstress failure. Although fatigue cracks were observed in the fractured left arm of the tailwheel A-frame, they were relatively small and would not likely have caused a failure without abnormal loading. Additionally, the fractures in the left arm initiated not only at the fatigue cracks but also at locations away from the fatigue cracks, consistent with an overstress fracture. It is likely that the tailwheel A-frame fractured due to excessive side loads on the frame, which led to the tailwheel separating and the subsequent loss of control.

Probable Cause and Findings

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

Excessive side loads imposed on the tailwheel A-frame during the takeoff roll, which resulted in a separation of the tailwheel and the subsequent loss of directional control.

Findings

Aircraft	Nose/tail landing gear - Failure
Aircraft	Directional control - Attain/maintain not possible
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Takeoff	Landing gear collapse (Defining event)
Takeoff	Loss of control on ground
Takeoff	Collision with terr/obj (non-CFIT)

On September 16, 2016, about 0820 Alaska daylight time, a tundra tire-equipped Helio Courier H-295 airplane, N6464V, sustained substantial damage following a loss of control and subsequent runway excursion during takeoff from a remote, unimproved airstrip near Fairbanks, Alaska. The airplane was being operated by Wright Air Service, Fairbanks, Alaska, as a visual flight rules (VFR) on-demand commercial flight under the provisions of 14 *Code of Federal Regulations* (CFR) Part 135. The certificated airline transport pilot and one passenger were not injured. Visual meteorological conditions prevailed, and a VFR flight plan had been filed.

During an interview with the National Transportation Safety Board (NTSB) investigator-in-charge on September 20, the pilot stated that everything seemed normal as he initiated the takeoff. About 300 feet into the takeoff roll, the airplane veered sharply to the left, exited the airstrip and impacted brush and trees, resulting in substantial damage to the fuselage and left horizontal stabilator.

The initial examination of the airplane, reported by the pilot, revealed that the tailwheel separated from its attach point and folded underneath the empennage. A trench was visible in the airstrip's surface that began about 300 feet from the point where the takeoff roll was initiated and continued to where the airplane impacted the brush and trees.

The tailwheel A-frame consisted of two arms extending forward of a flanged downtube, with a brace cross tube present between the two forward facing arms. The tailwheel A-frame was attached to the airframe at the forward ends of the arms, and to a shock absorber on the aft side of the down tube. Corner braces reinforced the attachments between the arms and the downtube. The corner brace between the left arm and the downtube was buckled and cracked, and the left arm was fractured where it was welded to the downtube. The tailwheel A-frame assembly was sent to the NTSB's Materials Laboratory in Washington D.C. for examination.

An NTSB Senior Materials Engineer reported that visual and magnified optical examinations of the fractures in the left arm revealed a matte gray fracture on slant planes consistent with a ductile overstress fracture. However, a portion of the fracture surface had a fracture in a plane perpendicular to the surface across most of the fracture with small shear lips present. Two areas had no shear lips at the surface and were oxidized with smooth curving boundaries, consistent with fatigue. The right arm had a crack that was opened in the laboratory. Examination of the fracture revealed that a portion of the fracture surface at the upper side of the right arm was on a plane perpendicular to the surface and was oxidized with curving black arrest lines, features consistent with fatigue. The remainder of the fracture surface had matte gray features on slant planes across the thickness of the arm wall. The fatigue regions in the left

and right arms were up to 0.016 inch deep and 0.066 inch deep, respectively. The fracture surfaces where the brace tube between the arms had separated from the right arm were examined. The fracture features had matte gray features on slant planes consistent with ductile overstress fracture. In addition, fracture features where the shock absorber attachment ear fractured had features consistent with ductile overstress fracture. (Refer to the Materials Laboratory Factual Report in the public docket for further fracture information)

The closest weather reporting facility was Fairbanks International Airport, Fairbanks, Alaska, about 42 miles south of the accident site. At 0753, an aviation routine weather report (METAR) from Fairbanks Airport, was reporting in part: wind from 050° at 4 knots; visibility, 10 statute miles; sky condition, broken clouds 5,500 feet, broken clouds 7,500 feet, broken clouds 15,000 feet; temperature, 39° F; dew point 37° F; altimeter, 29.36 inHG.

Pilot Information

Certificate:	Airline transport	**Age:**	36,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	November 24, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 5, 2016
Flight Time:	12000 hours (Total, all aircraft), 140 hours (Total, this make and model), 11000 hours (Pilot In Command, all aircraft), 350 hours (Last 90 days, all aircraft), 140 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Helio	**Registration:**	N6464V
Model/Series:	H 295	**Aircraft Category:**	Airplane
Year of Manufacture:	1969	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1414
Landing Gear Type:	Tailwheel	**Seats:**	
Date/Type of Last Inspection:	September 2, 2016 100 hour	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	6112.7 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	C126 installed, not activated	**Engine Model/Series:**	GO-480 SERIES
Registered Owner:	BURSIEL EQUIPMENT INC	**Rated Power:**	295 Horsepower
Operator:	Wright Air Service	**Operating Certificate(s) Held:**	Commuter air carrier (135), On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAFA	**Distance from Accident Site:**	
Observation Time:	15:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 5500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	50°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.36 inches Hg	**Temperature/Dew Point:**	4°C / 3°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Fairbanks, AK	**Type of Flight Plan Filed:**	VFR
Destination:	Fairbanks, AK	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	65.470001,-147.338333(est)

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	Andrew Noble; Federal Aviation Administration; Fairbanks, AK Ken Michaelis; Wright Air Service; Fairbanks, AK
Original Publish Date:	July 26, 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=94042