Aviation Investigation Final Report

Location:	Nome, Alaska	**Incident Number:**	ANC15IA006
Date & Time:	December 20, 2014, 10:30 Local	**Registration:**	N393B
Aircraft:	Cessna 180J	**Aircraft Damage:**	Minor
Defining Event:	Flight control sys malf/fail	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, shortly after takeoff, the airplane made an uncommanded hard right turn. He attempted to correct for the right turn with left rudder, but the airplane continued turning right. The pilot then input nearly full left aileron, and the airplane began a gradual left turn. After the pilot returned the ailerons to the neutral position, the airplane again immediately turned right. The pilot corrected with left aileron and then made an emergency landing to the departure runway. During the emergency landing, the airplane veered right, exited the runway, and impacted a snow berm, which resulted in minor damage to the landing gear.

Examination of the rudder control system revealed that the right tailwheel steering cable had jumped off its pulley and became bound between the pulley and the pulley bracket, which disabled the rudder system. The pulley's guard pin was in place, and the steering cable had separated about 9 inches from the rudder bellcrank and exhibited features consistent with overload.

Probable Cause and Findings

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

The disengagement and subsequent binding of the right tailwheel steering cable, which disabled the rudder system.

Findings

Aircraft	Rudder control system - Malfunction

Factual Information

History of Flight

Takeoff	Flight control sys malf/fail (Defining event)

On December 20, 2014, about 1030 Alaska standard time, a Cessna 180J airplane, N393B, experienced a flight control anomaly after takeoff, and an emergency landing was performed to the Nome Airport, Nome, Alaska. The airplane was being operated by the pilot as a visual flight rules (VFR) flight under the provisions of Title 14, Code of Federal Regulations (CFR) Part 91, when the incident occurred. The solo certificated private pilot was not injured. Visual meteorological conditions prevailed, and no flight plan had been filed. The flight departed Nome, Alaska, about 1025 destined for Council, Alaska.

The pilot reported that about three seconds after takeoff the airplane made an uncommanded hard right turn, he attempted to correct for the right turn with left rudder, but the airplane continued to the right. The pilot then inputted nearly full left aileron, and the airplane began a gradual left turn. After returning the ailerons to the neutral position, the airplane once again made an immediate right turn. The pilot corrected with left aileron, and made an emergency landing to runway 28 at the Nome Airport. During the emergency landing the airplane veered to the right, exited the runway and impacted a snow berm sustaining minor damage to the landing gear.

The airplane was examined by a Federal Aviation Administration (FAA) safety inspector. From the pilot's position, the rudder is controlled by two cables which proceed from the rudder control bar, make about a 90 degree turn toward the tail via two phenolic pulleys and attach to their respective rudder bellcranks. Two cables then proceed from the top of the rudder bellcranks to their respective attach points on the rudder control horn, while two tailwheel steering cables attach to the lower rudder bellcranks make about a 90 degree turn via two phenolic pulleys to their respective attach points on the tailwheel. During the inspection, the inspector reported that the right tailwheel steering cable had jumped off its pulley and became bound between the pulley and the pulley bracket, disabling the rudder system. He noted that the pulley's guard pin was in place, and that the steering cable had separated approximately 9 inches from the rudder bellcrank, and exhibited features consistent with overload.

The closest weather reporting facility was Nome Airport. At 1053, a weather observation from Nome Airport was reporting, in part: wind calm; visibility, 10 statute miles; scattered clouds at 25,000 feet, temperature, 9 degrees F; dew point 3 degrees F; altimeter, 29.30 inHG.

Pilot Information

Certificate:	Private	**Age:**	47
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 20, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 14, 2013
Flight Time:	345 hours (Total, all aircraft), 240 hours (Total, this make and model), 300 hours (Pilot In Command, all aircraft), 24 hours (Last 90 days, all aircraft), 1.6 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N393B
Model/Series:	180J	**Aircraft Category:**	Airplane
Year of Manufacture:	1973	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18052299
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	January 31, 2014 Annual	**Certified Max Gross Wt.:**	2800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4753.6 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	IO-470-R
Registered Owner:	OTTON DARRIN L	**Rated Power:**	265 Horsepower
Operator:	OTTON DARRIN L	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PAOM,375 ft msl	**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 25000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.29 inches Hg	**Temperature/Dew Point:**	-13°C / -16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Nome, AK (PAOM)	**Type of Flight Plan Filed:**	None
Destination:	Nome, AK (PAOM)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class E

Airport Information

Airport:	Nome Airport PAOM	**Runway Surface Type:**	Asphalt
Airport Elevation:	38 ft msl	**Runway Surface Condition:**	Dry;Snow
Runway Used:	28	**IFR Approach:**	None
Runway Length/Width:	6001 ft / 150 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Minor
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	64.512222,-165.445281(est)

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	John Chalstrom; Federal Aviation Administration; Fairbanks, AK
Original Publish Date:	August 11, 2015
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this incident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90548