Aviation Investigation Final Report

Location:	Skwentna, Alaska	**Accident Number:**	ANC17LA033
Date & Time:	June 17, 2017, 14:34 Local	**Registration:**	N4018H
Aircraft:	Piper PA 12	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was transporting about 120 lbs of plywood, secured to the airplane's float struts via cargo straps, to his remote cabin. The pilot reported that, about 200 ft above the ground during the landing approach, the airplane experienced an uncommanded left turn, then the pilot realized that he had no rudder control and that the rudder was "locked to the left." The airplane subsequently impacted trees and terrain. The pilot reported no mechanical anomalies with the engine and no anomalies with the airplane before the loss of control.

The airplane's water rudder cables descend from the fuselage along the support struts to which the plywood was secured. The water rudders were directly linked to the rudder. It is likely that, during the flight, the plywood shifted and interfered with the water rudder cable, which resulted in the pilot's loss of rudder control during the landing approach.

Probable Cause and Findings

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

The pilot's failure to properly secure the external load, which resulted in the load shifting during flight, interference with the water rudder cable, and a subsequent loss of control

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Attain/maintain not possible
Personnel issues	Incorrect action performance - Pilot
Aircraft	CG/weight distribution - Not specified
Aircraft	Lateral/bank control - Attain/maintain not possible
Aircraft	Agricultural/external load sys - Incorrect use/operation

Factual Information

History of Flight

Prior to flight	Aircraft loading event
Landing	Loss of control in flight (Defining event)
Landing	Attempted remediation/recovery
Landing	Collision with terr/obj (non-CFIT)

On June 17, 2017, about 1434 Alaska daylight time, a float-equipped Piper PA-12 airplane, N4018H, was destroyed when it was involved in an accident near Skwentna, Alaska. The commercial pilot was uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations* (*CFR*) Part 91 external cargo load flight.

According to the pilot, the purpose of the flight was to transport plywood to his cabin. The cabin was located off Indian Creek, a tributary of the Yentna River, about 14.5 miles southeast of Skwentna, Alaska. About 120 lbs of plywood was secured with various cargo straps to the struts that attached the floats to the fuselage. As the pilot was approaching to land to the south on the north-to-south oriented waterway with a "light wind" from the south, about 200 ft above the trees, the airplane made an uncommanded turn to the left. The pilot did not recall the airspeed at the time. The pilot reported that he applied left rudder with no response and that the rudder was "locked to the left." The pilot was unable to maintain control, and the airplane impacted trees and came to rest in an open meadow. The pilot was able to egress without further incident.

The pilot reported no preimpact mechanical malfunctions or failures with the engine or the airframe prior to the uncommanded turn to the left during the landing approach.

Plywood secured to the float struts of a Piper PA-12 would be angled such that the plywood would follow the downward angle of the struts. The floats on the airplane were the Edo 089-2000 type.

The water rudder cables on the airplane descend from the fuselage along the support struts to which the plywood was secured. The water rudders are directly linked to the rudder.

The airplane's gross weight and center of gravity for the accident flight could not be determined.

According to FAA Order 8400.34, for an airplane to legally and safely conduct external load operations under Part 91 or Part 135, the completion of several steps of a comprehensive process are required. This process is required for each individual airplane and is handled through a local FSDO. The airplane must meet certain eligibility requirements, the external

load must meet certain eligibility requirements, the airplane must be inspected by the FAA, various forms must be reviewed and completed, and then a FAA Form 8310-7 Special Airworthiness Certificate is issued as well as operating limitations. Operational flight checks are also required to ensure that the airplane is safely controllable and has no adverse flight characteristics while carrying an external load.

The pilot reported that he had an external load permit on file with the FAA and that he had been conducting external loads for several years with the accident airplane; however, review of FAA records revealed no external load permit for the accident airplane. The pilot previously held an external load permit for a Cessna A185F airplane.

FAA Order 8400.34 states that plywood installed as an external load is consider a major alteration to the airframe. Additionally, this document discusses the aerodynamic effects of external loads and states in part:

Aerodynamic forces and the weight of an external load change an airplane's handling and flight characteristics. These forces can negatively affect airplane performance (takeoff, climb, cruise, and landing), airplane stability, flight control effectiveness, vibration, fuel consumption, and engine cooling, among other characteristics.

Pilot Information

Certificate:	Commercial	**Age:**	66,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Unknown	**Last FAA Medical Exam:**	September 1, 2016
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 16, 2016
Flight Time:	(Estimated) 20300 hours (Total, all aircraft), 9000 hours (Total, this make and model), 20300 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 100 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4018H
Model/Series:	PA 12 NO SERIES	**Aircraft Category:**	Airplane
Year of Manufacture:	1947	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	12-3446
Landing Gear Type:	Float	**Seats:**	2
Date/Type of Last Inspection:	June 16, 2016 Annual	**Certified Max Gross Wt.:**	1750 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320 Series
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PASW,148 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	22:53 Local	**Direction from Accident Site:**	296°
Lowest Cloud Condition:	Scattered / 9000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 12000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	15°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Houston, AK (80AK)	**Type of Flight Plan Filed:**	None
Destination:	Skwentna, AK (None)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Remote Creek None	**Runway Surface Type:**	Water
Airport Elevation:	92 ft msl	**Runway Surface Condition:**	Water-calm
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	61.879165,-150.79472(est)

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Spencer Leonard; FAA Anchorage FSDO; Anchorage , AK
Original Publish Date:	May 5, 2021
Last Revision Date:	
Investigation Class:	Class 2
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95414