



Aviation Investigation Final Report

Location:	Reno, Nevada	Accident Number:	WPR23LA330
Date & Time:	August 29, 2023, 10:05 Local	Registration:	N53GR
Aircraft:	Yamaha Fazer SAR	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	N/A
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

The operator of the uncrewed aircraft system (UAS) reported that, he and an external emergency safety pilot were conducting an engineering test flight to fine tune the autopilot's tail rotor yaw limits. While hovering at 50 ft agl, the operator incorrectly input a full left tail rotor command, causing the UAS to begin a rapid counterclockwise rotation. The auto pilot was unable to maintain a level attitude or stabilize the UAS during the rotation, and descended uncontrollably. The safety pilot attempted to stabilize the UAS manually, using the emergency RC controller, to no avail. The UAS impacted the surface, resulting in substantial damage to the tailboom. The operator of the UAS reported that there were no preaccident mechanical malfunctions or failures that would have precluded normal operation.

Probable Cause and Findings

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

The operator's incorrect input into the ground station controller, resulting in a loss of control during flight and subsequent impact with terrain.

Findings

Aircraft	Yaw control - Not attained/maintained
Personnel issues	Use of equip/system - Pilot
Personnel issues	Task monitoring/vigilance - Pilot

Factual Information

History of Flight

Maneuvering-hover	Loss of control in flight (Defining event)
--------------------------	--

Pilot Information

Certificate:	Airline transport; Flight engineer; Flight instructor	Age:	72,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	Seat Occupied:	None
Other Aircraft Rating(s):	Unmanned (sUAS)	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	Toxicology Performed:	
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	October 1, 2023
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	September 5, 2022
Flight Time:	23578 hours (Total, all aircraft), 112 hours (Total, this make and model), 4860 hours (Pilot In Command, all aircraft)		

Other flight crew Information

Certificate:	Private	Age:	38,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	None
Other Aircraft Rating(s):	Unmanned (sUAS)	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	May 9, 2023
Occupational Pilot:	No	Last Flight Review or Equivalent:	July 3, 2023
Flight Time:	(Estimated) 58 hours (Total, all aircraft), 296 hours (Total, this make and model), 13 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Yamaha	Registration:	N53GR
Model/Series:	Fazer SAR	Aircraft Category:	Helicopter
Year of Manufacture:	2021	Amateur Built:	
Airworthiness Certificate:	Experimental (Special); Special flight (Special)	Serial Number:	L36-2-000113
Landing Gear Type:	Skid	Seats:	0
Date/Type of Last Inspection:	July 6, 2023 100 hour	Certified Max Gross Wt.:	244 lbs
Time Since Last Inspection:	42.9 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	144 Hrs at time of accident	Engine Manufacturer:	Yamaha Motor Co
ELT:	Not installed	Engine Model/Series:	Fazer R
Registered Owner:	On file	Rated Power:	27 Horsepower
Operator:	On file	Operating Certificate(s) Held:	Certificate of authorization or waiver (COA)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KRTS, 5053 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	09:55 Local	Direction from Accident Site:	134°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots / 14 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.16 inches Hg	Temperature/Dew Point:	24°C / -5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Reno, NV	Type of Flight Plan Filed:	None
Destination:	Reno, NV	Type of Clearance:	None
Departure Time:		Type of Airspace:	Class E

Airport Information

Airport:	Reno/Stead KRTS	Runway Surface Type:	
Airport Elevation:	5050 ft msl	Runway Surface Condition:	Dry
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	N/A	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	N/A	Latitude, Longitude:	39.685,-119.888

Administrative Information

Investigator In Charge (IIC):	Blocher, Kristyn
Additional Participating Persons:	Robert Garvey; Federal Aviation Administration; Seattle/Reno, NV
Original Publish Date:	December 7, 2023
Last Revision Date:	
Investigation Class:	Class 4
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=192962

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](#).