



# Aviation Investigation Final Report

<b>Location:</b>	Scio, Oregon	<b>Accident Number:</b>	WPR22LA045
<b>Date &amp; Time:</b>	November 22, 2021, 15:10 Local	<b>Registration:</b>	N102LD
<b>Aircraft:</b>	ELVIN JACK R JR ROTORWAY EXEC 162F	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Flight control sys malf/fail	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Flight test		

## Analysis

The pilot of the experimental helicopter reported that, he had performed maintenance on the tail rotor assembly. While checking the blade tracking and balance in a hover, a pitch change link retention bolt lost torque and separated from the tail rotor slide assembly, which resulted in the loss of control and subsequent rollover. The helicopter sustained substantial damage to the fuselage, tailboom, and main rotor system.

The pilot reported that there were no preaccident mechanical failures or malfunctions with the helicopter and that he failed to ensure the maintenance was performed correctly.

## Probable Cause and Findings

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

The pilot's improper maintenance on the tail rotor assembly, which resulted in the loss of control and roll over.

## Findings

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Personnel issues

Installation - Owner/builder

## Factual Information

### History of Flight

<b>Maneuvering-hover</b>	Flight control sys malf/fail (Defining event)
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### Pilot Information

<b>Certificate:</b>	Private; Student	<b>Age:</b>	74, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	None None	<b>Last FAA Medical Exam:</b>	October 25, 2005
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	April 7, 2006
<b>Flight Time:</b>	1550 hours (Total, all aircraft), 350 hours (Total, this make and model), 1300 hours (Pilot In Command, all aircraft), 3 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	ELVIN JACK R JR	<b>Registration:</b>	N102LD
<b>Model/Series:</b>	ROTORWAY EXEC 162F	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	2003	<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>	Experimental (Special)	<b>Serial Number:</b>	1001
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	1
<b>Date/Type of Last Inspection:</b>	August 25, 2021 Condition	<b>Certified Max Gross Wt.:</b>	1600 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	360 Hrs	<b>Engine Manufacturer:</b>	AMA/EXPR
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	162F
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	150 Horsepower
<b>Operator:</b>	Jack R Elvin JR	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KCVO,250 ft msl	<b>Distance from Accident Site:</b>	21 Nautical Miles
<b>Observation Time:</b>	14:56 Local	<b>Direction from Accident Site:</b>	247°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Overcast / 8000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	3 knots /	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>	330°	<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.08 inches Hg	<b>Temperature/Dew Point:</b>	9°C / 6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Scio, OR	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Scio, OR	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	Jack's Heliport 250R	<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	340 ft msl	<b>Runway Surface Condition:</b>	Vegetation
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	44.638285,-122.82748(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Salazar, Fabian
<b>Additional Participating Persons:</b>	Jason Lawver; Federal Aviation Administration; Portland, OR
<b>Original Publish Date:</b>	August 12, 2022
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 4</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=104300">https://data.nts.gov/Docket?ProjectID=104300</a>

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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](#).