



# Aviation Investigation Final Report

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<b>Location:</b>	Spofford, Texas	<b>Accident Number:</b>	CEN24LA088
<b>Date &amp; Time:</b>	January 11, 2024, 19:00 Local	<b>Registration:</b>	N204TX
<b>Aircraft:</b>	Eurocopter AS 350 B2	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Powerplant sys/comp malf/fail	<b>Injuries:</b>	2 Minor
<b>Flight Conducted Under:</b>	Public aircraft		

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## Analysis

The flight crew had completed their aerial observation and were enroute to the destination airport. While enroute, the pilot felt a violent yaw to the right, saw the engine low pressure annunciator illuminate, and heard the low rotor horn. After the engine lost power, the pilot transferred the flight controls to the copilot, who performed an autorotation and landed the helicopter in a brush-covered field.

Postaccident examination and testing of the engine revealed that the engine's fuel control unit (FCU) control lever arm was broken. Metallurgical examination of the control lever arm revealed it had failed due to a fatigue fracture which resulted in a loss of fuel control to the engine and fuel starvation.

## Probable Cause and Findings

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

The fatigue failure of the fuel control unit control lever arm, which resulted in fuel starvation, and a loss of engine power.

## Findings

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**Aircraft**

Fuel controlling system - Failure

## Factual Information

### History of Flight

<b>Enroute</b>	Powerplant sys/comp malf/fail (Defining event)
<b>Enroute</b>	Loss of engine power (total)
<b>Autorotation</b>	Collision with terr/obj (non-CFIT)

On January 11, 2024, at 1900 central standard time, a Eurocopter AS 350 B2, N204TX, was substantially damaged when it was involved in an accident near Spofford, Texas. The pilot and copilot received minor injuries. The helicopter was operated as a public aircraft conducting an aerial observation flight.

During the flight, the pilot decided to return to his base when he saw that the fuel gauge indicated 20% fuel remaining. The engine instruments did not indicate any anomalies. The pilot then felt a violent yaw to the right, saw the engine low pressure annunciator illuminate, and heard the low rotor horn. The copilot asked the pilot what happened, and the pilot said that they had lost the engine. The pilot transferred controls to the copilot after the rotor rpm returned to the normal operating range. The copilot then performed an autorotation and landed the helicopter in a brush-covered field. The helicopter sustained substantial damage to the tail boom and main rotor.

The engine was placed in a test cell for a postaccident engine run. During the run, the engine would not accelerate past 45% gas generator speed (Ng). The FCU, part number 0164851320, serial number 937B, was removed, and another FCU was installed. The engine then operated normally during the second test run. The FCU from the accident airplane was bench tested. The test revealed that it could not achieve maximum fuel flow per the test specifications. The FCU was then disassembled, and the FCU control lever arm, part number 0164042540, was found broken.

National Transportation Safety Board Materials Laboratory examination of the broken FCU control lever arm revealed a crack with fine fatigue striations, typical of high-cycle or low-load fatigue. Outside of this crack, the fracture surface exhibited dimpled rupture, consistent with subsequent overstress fracture in the remaining lever arm. According to the examination report, these features were consistent with the initial fracture of the lever arm through about two-thirds of the cross-section. This crack or fracture edge of this early fracture then initiated fatigue cracking at multiple sites. Once the fatigue cracks had propagated deep enough, the remainder of the lever arm cross sections fractured via overstress.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	39, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	February 6, 2023
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	August 25, 2023
<b>Flight Time:</b>	768 hours (Total, all aircraft), 433 hours (Total, this make and model), 584 hours (Pilot In Command, all aircraft), 61 hours (Last 90 days, all aircraft), 49 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Co-pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	54, 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>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	March 10, 2023
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	June 12, 2022
<b>Flight Time:</b>	3448 hours (Total, all aircraft), 3430 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Eurocopter	<b>Registration:</b>	N204TX
<b>Model/Series:</b>	AS 350 B2	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	2003	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	3711
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	December 20, 2023 100 hour	<b>Certified Max Gross Wt.:</b>	4961 lbs
<b>Time Since Last Inspection:</b>	9547.3 Hrs	<b>Engines:</b>	1 Turbo shaft
<b>Airframe Total Time:</b>	at time of accident	<b>Engine Manufacturer:</b>	Safran Aircraft Engines
<b>ELT:</b>	C126 installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	Arriel 1D1
<b>Registered Owner:</b>	Texas Department of Public Safety	<b>Rated Power:</b>	712 Horsepower
<b>Operator:</b>	Texas Department of Public Safety	<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>	Night/dark
<b>Observation Facility, Elevation:</b>	5T9,887 ft msl	<b>Distance from Accident Site:</b>	26 Nautical Miles
<b>Observation Time:</b>	19:15 Local	<b>Direction from Accident Site:</b>	180°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	170°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.46 inches Hg	<b>Temperature/Dew Point:</b>	21°C / -10°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Del Rio, TX (DRT)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Spofford, TX	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	16:45 Local	<b>Type of Airspace:</b>	Class E

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 Minor	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Minor	<b>Latitude, Longitude:</b>	29.1593,-100.4986(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Gallo, Mitchell
<b>Additional Participating Persons:</b>	Eric Vietje; Federal Aviation Administration, San Antonio FSDO; San Antonio, TX Bryan Kold; Texas Department of Safety; TX Bernard Boudaille; Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile Bryan Larimore; Safran Helicopter Engines; Grand Prairie, TX Seth Buttner; Airbus Helicopters North America; Grand Prairie, TX
<b>Original Publish Date:</b>	February 13, 2025
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</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=193642">https://data.nts.gov/Docket?ProjectID=193642</a>

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](#).