



# Aviation Investigation Final Report

<b>Location:</b>	LINCOLN, Nebraska	<b>Incident Number:</b>	MKC87IA070
<b>Date &amp; Time:</b>	March 30, 1987, 15:00 Local	<b>Registration:</b>	N4GH
<b>Aircraft:</b>	Agusta A109	<b>Aircraft Damage:</b>	Minor
<b>Defining Event:</b>		<b>Injuries:</b>	3 None
<b>Flight Conducted Under:</b>	Part 91: General aviation		

## Analysis

THE PIC STATED THAT HE WAS GROUND TAXIING THE HELO TO THE RAMP AREA AT DUNCAN AVIATION TO SHUTDOWN FOR REFUELING. DURING THE TAXI, THE PIC HEARD A LOUD 'BANG' EMINATING FM THE REAR OF THE HELO. THE PIC LOWERED COLLECTIVE PITCH AND NO FURTHER NOISE WAS HEARD AND NO VIBRATION WAS FELT. THE PIC RE-APPLIED COLLECTIVE PITCH TO MOVE FORWARD WHEN THE HELO BEGAN TO YAW AND VIBRATE. AT THIS POINT THE PIC LOWERED COLLECTIVE TO FLAT PITCH AND SHUTDOWN THE ENG. REMOVAL REVEALED A BROKEN PORTION OF THE T/R DRIVESHAFT ABOUT 1 FT FORWARD OF THE GEARBOX. METALLURGICAL EXAMINATION BY THE NTSB LAB AND AN INDEPENDENT METALLURGIST CONCLUDED THAT THE DRIVESHAFT FAILED IN A MANNER CHARACTERISTIC OF TORSIONAL OVERLOAD. THE PIC STATED THAT NO CONTACT WITH THE GRND OR STATIONARY OBJECT HAD OCCURRED.

## Probable Cause and Findings

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

### Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION  
Phase of Operation: TAXI - FROM LANDING

Findings

1. (C) ROTOR DRIVE SYSTEM, TAIL ROTOR DRIVE SHAFT - OVERTORQUE
2. (C) ROTOR DRIVE SYSTEM, TAIL ROTOR DRIVE SHAFT - FAILURE, TOTAL

## Factual Information

### Pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	45, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane single-engine	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	February 19, 1987
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	8334 hours (Total, all aircraft), 68 hours (Total, this make and model), 8012 hours (Pilot In Command, all aircraft), 58 hours (Last 90 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Agusta	<b>Registration:</b>	N4GH
<b>Model/Series:</b>	A109 A109	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Utility	<b>Serial Number:</b>	7151
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	8
<b>Date/Type of Last Inspection:</b>	December 14, 1986 100 hour	<b>Certified Max Gross Wt.:</b>	5730 lbs
<b>Time Since Last Inspection:</b>	11 Hrs	<b>Engines:</b>	2 Turbo shaft
<b>Airframe Total Time:</b>	2023 Hrs	<b>Engine Manufacturer:</b>	ALLISON
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	250-C20B
<b>Registered Owner:</b>	RODGERS HELICOPTER SERVICE	<b>Rated Power:</b>	420 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	15 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	9 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	240°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	6°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	OMAHA , NE	<b>Type of Flight Plan Filed:</b>	VFR
<b>Destination:</b>	LINCOLN , NE (LNK )	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	14:40 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>		<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	0	<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>	Minor
<b>Passenger Injuries:</b>	2 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	3 None	<b>Latitude, Longitude:</b>	40.909877,-96.790458(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Thorpe, Clint
<b>Additional Participating Persons:</b>	ILENE VALENT; LINCOLN , NE
<b>Original Publish Date:</b>	July 10, 1989
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=34308">https://data.nts.gov/Docket?ProjectID=34308</a>

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