



Aviation Investigation Final Report

Location:	GROVE, Oklahoma	Accident Number:	FTW98LA234
Date & Time:	May 20, 1998, 09:25 Local	Registration:	N6144S
Aircraft:	Harding MINI-500B	REVOLUTION	Aircraft Damage: Destroyed
Defining Event:		Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While cruising at an altitude of 1,350 feet MSL, the pilot felt a 'sudden hesitation and [smelled the] odor of smoke.' While 'determining if [a] serious malfunction existed,' the helicopter experienced a loss of main rotor drive and altitude, 'along with a stronger burning odor.' The pilot initiated an autorotation to a field adjacent to a school. However, prior to reaching the intended landing area, the helicopter struck a pickup truck, 'flipped over, landed in [the] field and started on fire.' The pilot reported that prior to the flight he had adjusted the alignment of the main drive belt and engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The improper alignment of the main drive belt by the owner/pilot/mechanic, which resulted in the failure of the main drive belt. A factor was the lack of suitable terrain for the forced landing.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE

Findings

1. (C) ROTOR DRIVE SYSTEM, MAIN ROTOR DRIVE BELT - FAILURE

2. (C) MAINTENANCE, ALIGNMENT - IMPROPER - OWNER/PILOT MECHANIC

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Findings

3. AUTOROTATION - INITIATED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: DESCENT - EMERGENCY

Findings

4. OBJECT - VEHICLE

5. (F) TERRAIN CONDITION - NONE SUITABLE

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

On May 20, 1998, at 0925 central daylight time, a Harding Revolution Mini-500B experimental homebuilt helicopter, N6144S, owned and operated by the pilot, was destroyed during a forced landing following the loss of the main rotor drive near Grove, Oklahoma. Visual meteorological conditions prevailed, and a flight plan was not filed for the Title 14 CFR Part 91 personal flight. The private pilot, sole occupant of the aircraft, sustained minor injuries. The flight originated from the Grove Municipal Airport, about 25 minutes before the accident.

The pilot reported that he had adjusted the alignment of the main drive belt and engine. During the ensuing personal/test flight of the helicopter, while at a cruising altitude of 1,350 feet MSL, he felt a "sudden hesitation and [smelled the] odor of smoke." While he was "determining if [a] serious malfunction existed," the helicopter experienced a loss of main rotor drive and altitude, "along with a stronger burning odor." The pilot initiated an autorotation to a field adjacent to a school. However, prior to reaching the intended landing area, the helicopter struck a parked pickup truck, "flipped over, landed in [the] field and started on fire." The helicopter was destroyed by the postimpact fire.

The pilot had accumulated a total of 59 flight hours in helicopters, of which 14 hours were accumulated in his homebuilt helicopter.

Pilot Information

Certificate:	Private	Age:	36, Male
Airplane Rating(s):	None	Seat Occupied:	Center
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	September 22, 1997
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	59 hours (Total, all aircraft), 14 hours (Total, this make and model), 59 hours (Pilot In Command, all aircraft), 14 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Harding	Registration:	N6144S
Model/Series:	REVOLUTION MINI-500B REVOLUTION	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	0426
Landing Gear Type:	Skid	Seats:	1
Date/Type of Last Inspection:	May 20, 1998 Annual	Certified Max Gross Wt.:	855 lbs
Time Since Last Inspection:	14 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	14 Hrs	Engine Manufacturer:	Rotax
ELT:		Engine Model/Series:	582-UL-DCDI
Registered Owner:	ROY A. HARDING	Rated Power:	67 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	5 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	24°C
Precipitation and Obscuration:			
Departure Point:	(1H7)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	09:20 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	36.589397,-94.779762(est)

Administrative Information

Investigator In Charge (IIC):	Wigington, Douglas
Additional Participating Persons:	RICHARD FLETCHER; OKLAHOMA CITY , OK
Original Publish Date:	December 1, 1999
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=20619

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