



Aviation Investigation Final Report

Location:	Staples, Texas	Accident Number:	CEN12LA181
Date & Time:	March 5, 2012, 11:36 Local	Registration:	N1099N
Aircraft:	SIKORSKY AIRCRAFT CORPORATION 269C	Aircraft Damage:	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

About 15 minutes into a cross-country flight, the pilot heard a "pop" that sounded "like metal breaking." He felt a violent vibration and loss of torque pedal response. The pilot reported that there was no change in rpm, and he performed a precautionary autorotation and landing due to the vibration. During the landing, the helicopter impacted the ground hard and the main rotor blades contacted the tailboom.

On-scene and subsequent laboratory examination revealed no anomalies that would have precluded normal operation. The reason for the pop and subsequent vibration could not be determined.

Probable Cause and Findings

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

The pilot's failure to attain the proper descent rate during autorotation, which resulted in a hard landing. Contributing to the accident were the inflight vibrations and loss of torque pedal response for undetermined reasons.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Descent rate - Not attained/maintained
Aircraft	(general) - Malfunction

Factual Information

History of Flight

Enroute-cruise	Sys/Comp malf/fail (non-power) (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Hard landing

On March 5, 2012, about 1136 central standard time, a Sikorsky Aircraft Corporation 269C helicopter, N1099N, impacted terrain during a precautionary landing following an in-flight pop sound and torque pedal vibrations near Staples, Texas. The private pilot and passenger reported no injuries. The helicopter sustained substantial tailboom damage. The helicopter was registered to and operated by Xotic Aviation LLC. under the provisions of 14 Code of Federal Regulations Part 91 as personal flight. Day visual flight rules (VFR) conditions prevailed for the flight, which did not operated on a VFR flight plan. The flight originated from Fentress Airpark, near Fentress, Texas, about 1121, and was destined for Bulverde Airpark, near San Antonio, Texas.

According to the pilot's accident report, about 15 minutes into the flight, he heard a "pop" sound "like metal breaking." He felt a violent vibration and loss of torque pedal response. The pilot reported that there was no change in "RPM" and he performed a precautionary landing due to the vibration. The helicopter impacted terrain hard and the main rotor blades impacted the tailboom. The engine was shut down by the pilot after the landing.

The pilot held a private pilot certificate with ratings for rotorcraft-helicopter. His last Federal Aviation Administration (FAA) second-class medical was issued on August 24, 2011, with no limitations. The pilot reported that he had accumulated 143 hours of total flight time, of which 100 hours were in same make and model as the accident helicopter. He indicated flying 21 hours in the last 90 days and 10 hours in the last 30 days.

FAA inspectors and a manufacturer's safety investigator examined the helicopter. The helicopter wreckage debris field was approximately 100 yards long. The cockpit mounted Hobbs meter indicated 479.9 hours. The cockpit flight controls exhibited continuity. The tailboom was partially separated at its middle section just forward of the center attach fitting. The left tailboom support strut tube was separated at the tailboom end through the bolt holes attaching the tube to its end fitting. Tail rotor controls exhibited continuity up to the separated points of the tailboom and its rod ends safety wired hardware was intact. Drive system rotation was confirmed at the lower pulley shaft, the overrunning clutch, and up to the separated end of the tail rotor drive shaft. A main rotor damper assembly with blade grip attachment bracket and its hardware was retained for further examination.

Maintenance records showed that the helicopter's total time at its last maintenance work on February 8, 2012, was 10,037.2 hours and its Hobbs meter indicated 460.2 hours. The last maintenance in the logbook was the installation of a repaired main rotor blade. The last annual inspection was performed on January 24, 2012.

A National Transportation Safety Board senior materials engineer examined the retained damper items. A manufacturer's periodic extension-under-load test was applied to the damper and the damper met the test's specifications. Separation surfaces present on the damper assembly were consistent with overload and no evidence of preexisting cracks were observed.

No anomalies were detected that would have precluded normal operations. The reason for the pop and subsequent vibration was not determined.

Pilot Information

Certificate:	Private	Age:	29
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Unknown
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	August 24, 2011
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	143 hours (Total, all aircraft), 100 hours (Total, this make and model), 94 hours (Pilot In Command, all aircraft), 21 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	SIKORSKY AIRCRAFT CORPORATION	Registration:	N1099N
Model/Series:	269C	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	700939
Landing Gear Type:	Skid	Seats:	3
Date/Type of Last Inspection:	January 24, 2012 Annual	Certified Max Gross Wt.:	2050 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	10057 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	Not installed	Engine Model/Series:	H10-360-B1A
Registered Owner:	Xotic Aviation LLC.	Rated Power:	205 Horsepower
Operator:	Xotic Aviation LLC.	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	HYI,597 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	11:53 Local	Direction from Accident Site:	348°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	12 knots / 18 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	190°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.36 inches Hg	Temperature/Dew Point:	21°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	FENTRESS, TX (XS90)	Type of Flight Plan Filed:	None
Destination:	SAN ANTONIO, TX (1T8)	Type of Clearance:	None
Departure Time:	11:21 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	29.821111,-97.863052(est)

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	David Benningfield; Federal Aviation Administration; San Antonio, TX Steven Gleason; Sikorsky Aircraft Corp.; Horseheads, NY
Original Publish Date:	February 3, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83067

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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](#).