



National Transportation Safety Board Aviation Accident Data Summary

Location:	Denver, CO	Accident Number:	CEN12LA343
Date & Time:	06/02/2012, 1135 MDT	Registration:	N2196F
Aircraft:	SCHWEIZER 269C	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

The pilot reported that, during an introductory flight, he was conducting a 2-foot hover in the helicopter. An airplane started to taxi in front of the helicopter, so the pilot set the helicopter back down on the ground, left skid first and then the right. The helicopter drifted right as the skid made contact, and the pilot added left cyclic input to remedy the drift as he also lowered the collective. As the skids started to settle apart, the pilot noticed a low frequency vibration that immediately got worse. He determined that the helicopter was entering ground resonance, but the engine and collective parameters were too low to lift the helicopter off of the ground, as indicated in the helicopter's operating procedures. The pilot reduced the throttle to idle and "within seconds, the helicopter had shaken itself apart."

Postaccident testing revealed that all four landing gear dampers failed to meet the manufacturer's serviceable testing specifications, and two dampers were overcharged. Maintenance records indicated that the front dampers had been replaced with overhauled units about 10 months and about 534 flight hours before the accident. The aft dampers had been replaced with overhauled units about 7 months and about 280 flight hours before the accident. A review of the manufacturer's overhaul procedure for the landing gear dampers revealed that the procedure used by the overhaul facility did not include functional testing of the dampers following overhaul, which would have identified the out-of-specification condition before installation. Maintenance procedures required periodic inspection of the landing gear dampers, and the operator stated that the 100-hour inspection procedure was accomplished about 1 month before the accident. The mechanic who accomplished this inspection reported that he used the manufacturer's procedures to complete the inspection. However, the out-of-specification damper conditions were not detected.

As a result of this and a similar accident (CEN12LA353), the helicopter manufacturer has committed to revising the overhaul manual to include testing procedures and criteria for overhauled landing gear dampers.

Flight Events

Prior to flight - Aircraft maintenance event

Landing - Ground resonance

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadequately overhauled landing gear dampers that allowed initiation of a ground resonance event from which the pilot was unable to recover. Contributing to the accident was the overhaul facility's failure to identify the overcharged dampers and a lack of any published acceptance testing criteria for the dampers in the manufacturer's overhaul procedure manual, resulting in the out-of-specification dampers being provided to the operator. Also contributing was the ineffective damper inspection conducted by the operator's maintenance personnel.

Findings

Aircraft-Aircraft systems-Landing gear system-Aux gear (tail/rotorcraft skid)-Damaged/degraded - C
Aircraft-Aircraft systems-Landing gear system-Aux gear (tail/rotorcraft skid)-Incorrect service/maintenance - F

Personnel issues-Task performance-Maintenance-Scheduled/routine maintenance-Maintenance personnel - F

Organizational issues-Support/oversight/monitoring-Oversight-Oversight of personnel-Maintenance provider - F

Organizational issues-Support/oversight/monitoring-Documentation/record keeping-Maintenance records-Manufacturer - F

Flight Instructor Information

Certificate:	Flight Instructor; Commercial	Age:	26
Airplane Rating(s):	None	Instrument Rating(s):	Helicopter
Other Aircraft Rating(s):	Helicopter	Instructor Rating(s):	Instrument Helicopter
Flight Time:	259 hours (Total, all aircraft), 212 hours (Total, this make and model), 240 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	SCHWEIZER	Registration:	N2196F
Model/Series:	269C	Engines:	1 Reciprocating
Operator:	TYJ Global	Engine Manufacturer:	LYCOMING
Air Carrier Operating Certificate:	None	Engine Model/Series:	HIO-360-D1A
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KBJC, 5670 ft msl	Weather Information Source:	Weather Observation Facility
Conditions at Accident Site:	Visual Conditions	Lowest Ceiling:	None
Condition of Light:	Day	Wind Speed/Gusts, Direction:	4 knots, Variable
Temperature:	23° C / 4° C	Visibility	50 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Denver, CO (BJC)	Destination:	Denver, CO (BJC)

Airport Information

Airport:	Rocky Mountain Metro Airport (BJC)	Runway Surface Type:	
Runway Used:	N/A	Runway Surface Condition:	
Runway Length/Width:			

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

Administrative Information

Investigator In Charge (IIC):	Edward F Malinowski	Adopted Date:	02/03/2014
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=83876		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.