



Sikorsky

A United Technologies Company

Sikorsky Aircraft Engineering Examination Report

NTSB REPORT NUMBER: ERA14LA293

OPERATOR: Ace Pilot Training Inc

MODEL: 269C-1

**AIRCRAFT: S0144
(FAA registry N152CC)**

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Date of Accident: 6-17-14

Location of Accident: Allentown, PA

Report Date: 9-25-2014

Prepared By:


Steven Gleason

Aircraft Safety Investigation Light Helicopters

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I. INTRODUCTION

The purpose of this report is to present factual observations on the condition of the mishap aircraft prior to and after the mishap in order to make a determination as to whether the aircraft condition played a role in the cause of the accident. All aspects of a safety investigation were explored to identify primary cause factors that may have contributed to this accident in an attempt to prevent the same accident from occurring again.

The National Transportation Safety Board (NTSB) was the cognizant investigating authority. Mr. Paul Cox was the Investigator-In-Charge. The NTSB conducted the mishap as a "Limited" investigation.

This report is based on information provided by the NTSB and FAA, as well as the load stroke evaluations of the landing gear dampers conducted at TRUATLANTIC Manufacturing, Kernersville, NC. The Sikorsky Air Safety Investigator did not participate in the field examination of the aircraft.

II. BACKGROUND

A. Mission

The flight was intended as a 14 CFR Part 91 Solo instructional flight from the Lehigh Valley International Airport. No flight plan was filed with the FAA, nor was one required. Good weather prevailed for the day VFR flight.

B. Accident Sequence

During the landing after the local solo flight, the student pilot reported that the helicopter started to shake as she decreased power for engine cool down. She repositioned the aircraft to the pad and reduced engine power, but the oscillations became stronger. FAA supplied photos show wreckage signature consistent with a ground resonance event.

C. Accident Site Description

The accident occurred on the airport, on a blacktop paved parking area.

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III. EVALUATION

A. Aircraft Configuration

The aircraft was a 269C-1 with dual fuel tanks and dual controls which were installed.

B. Weather

Weather conditions recorded by Weather Underground indicate a clear VFR day with winds less than 16 kts.

C. Aircraft History

The aircraft was a 269C-1 serial number S0144 manufactured by Schweizer Aircraft and delivered in December of 2002 to Bear Mountain Helicopters.

The aircraft was registered as N152CC and owned by Ace Pilot Training Inc, Allentown PA.

D. Aircraft Maintenance

The FAA inspector indicated that the aircraft had been through a major inspection 53 hours previously. The FAA inspector also reviewed the maintenance records back to June of 2011 at approximately 800 hours aircraft time. He found no mention of the landing gear dampers in those records.

E. Aircraft Analysis

The landing gear dampers were forwarded to Sikorsky SGH for load stroke testing.

Airframe / landing gear dampers

The four landing gear dampers were tested at TRUATLANTIC Manufacturing LLC, Kernersville NC using a load cell to apply pressure and a computer to record the stroke versus the load required for compression. This computer program is the same as is used to verify proper assembly and operation of new production dampers. Representatives from the Greensboro FSDO were present for the testing. Charts for each test are attached. Charts for acceptable dampers are also attached.

All four dampers failed the load stroke test. All dampers exhibited slight amount of dried hydraulic fluid on the piston and interior of the boot.

The damper identified as left forward, part number 269A3150-19, serial number S0782, was intact with bending and a fracture to the upper bearing lug. The upper mounting cap was removed and a new cap installed to perform the test. No leakage of gas was observed and the upper plug was tight but turned slightly to reach the specified torque. The load stroke test showed that it was within tolerance on the compression stroke at the lower pressure test point, but was low 2500lbs (should be between 2900 and 3600lbs). It was out of limits at the ultimate load range.

The damper identified as right forward, part number 269A3150-19 serial number S0783 was intact. The load stroke test showed that it was low on the compression stroke lower pressure test point. It was slightly out of limits low 2830 lbs, at the ultimate load range (should be between 2900 and 3600lbs).

The damper identified as left rear part number 269A3150-21 serial number S0742 was intact with minor bending to the upper bearing lug. The load stroke test indicated low on the compression stroke lower pressure test point and out of limits low 2210 lbs, at the ultimate load point (should be 3200 to 3900lbs).

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The damper identified as right rear, part number 269A3150-21, serial number S0729 was intact with a slight bend to the upper lug. The load stroke test indicated an out of limits low 3100 lbs, at the ultimate load point (should be 3200 to 3900lbs).

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OBSERVATIONS

1. The left forward landing gear damper was significantly undercharged.
2. The right forward landing gear damper was slightly undercharged.
3. The left aft landing damper was significantly out of limits (undercharged)]
4. The right aft landing damper was slightly undercharged.

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APPENDICES

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APPENDIX I:

GLOSSARY: ACRONYMS AND ABBREVIATIONS

A&P	Aircraft and Powerplant (mechanic)
CFR	Code of Federal Regulations
CVR	Cockpit Voice Recorder
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
HMI	Handbook of Maintenance Instructions
IIC	Investigator in Charge
MGB	Main Gearbox
MR	Main Rotor
MRH	Main Rotor Head
NTSB	National Transportation Safety Board
RH	Right Hand
SAC	Sikorsky Aircraft Corporation
TR	Tail Rotor
TRDS	Tail Rotor Drive Shaft
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions

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APPENDIX II:

NTSB Personnel and other Parties to the Investigation

Paul Cox, Regional Office.....NTSB Investigator-in-Charge

Other Parties to the Investigation:

David Hintz.....	FAA ASI, Greensboro FSDO, Greensboro NC
Larry Bass.....	FAA ASI, Greensboro FSDO, Greensboro NC
James Williams.....	Sikorsky Global Helicopters Coatesville PA
Steven Gleason.....	Sikorsky Aircraft
Rick Handy.....	TruAtlantic Manufacturing Kernersville NC
(technician)	

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