Aviation Investigation Final Report

Location:	Camden, South Carolina	**Accident Number:**	ERA11LA278
Date & Time:	May 3, 2011, 02:45 Local	**Registration:**	N916AM
Aircraft:	Aerospatiale AS350B2	**Aircraft Damage:**	Substantial
Defining Event:	Hard landing	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instructor pilot had completed two night training flights in the helicopter, which included rapid decelerations, autorotations (including standard, hovering, and turning), sloping ground landings, and simulated hydraulic failures. The instructor pilot reported that at no time during the flights did he experience a hard landing or ground contact with the lower fin tail guard; however, a subsequent inspection revealed damage to the tailboom and tail rotor gearbox that was consistent with a hard landing. In addition, the lower fin tail guard contained fresh ground-contact marks, which were not present prior to the training flights.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The instructor pilot did not maintain adequate helicopter control while maneuvering, which resulted in a hard landing.

Findings

Aircraft	Landing flare - Not specified
Personnel issues	Aircraft control - Instructor/check pilot

Factual Information

History of Flight

Landing	Hard landing (Defining event)

On May 3, 2011, sometime between 0130 and 0355 eastern daylight time, an Aerospatiale AS350B2, N916AM, operated by Air Methods Corp., was substantially damaged while maneuvering at Woodward Field, Camden, South Carolina. The two certificated airline transport pilots were not injured. Night visual meteorological conditions prevailed and no flight plan was filed for the local flight. The training flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

According to a Federal Aviation Administration (FAA) inspector and the Operator, the helicopter was being utilized for night vision goggle training. Two training flights were conducted between 2130 on May 2, and 0355 on May 3, 2011.

According to the instructor pilot, both training flights comprised of similar maneuvers and profiles, which included rapid decelerations, standard autorotations, hovering autorotations, autorotations with turns, sloping ground landings, and simulated hydraulic failures. The instructor pilot stated that the helicopter was inspected prior to the second training flight, which began about 0130, and no discrepancies were noted. He further stated:

"…At no time during both training flights did any maneuver feel nor indicate either a heavy landing, or contact between the tail fin stinger and the ground. No abnormal vibrations were experienced throughout the evening training events…."

Subsequent inspection of the helicopter by an FAA inspector and a company mechanic revealed that the tail boom was buckled about 42-inches in front of the horizontal stabilizer. In addition, the tail rotor gearbox input seal was excessively leaking oil, and the tail fin stinger, which is reference by Eurocopter as the lower fin tail guard, contained fresh ground contact marks. The mechanic noted that no damage was present during an inspection he performed about 1900 on May 2, 2011.

In addition, the mechanic reported that a postaccident landing gear "spread check" was within manufacturer specifications; however, there were no previous measurements taken on the accident helicopter that could be used for comparison purposes.

Pilot Information

Certificate:	Airline transport	**Age:**	49
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	January 18, 2011
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	November 7, 2010
Flight Time:	4181 hours (Total, all aircraft), 740 hours (Total, this make and model), 3576 hours (Pilot In Command, all aircraft), 92 hours (Last 90 days, all aircraft), 43 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Airline transport	**Age:**	49,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	March 11, 2011
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	6000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aerospatiale	**Registration:**	N916AM
Model/Series:	AS350B2	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2404
Landing Gear Type:	Skid	**Seats:**	6
Date/Type of Last Inspection:	April 30, 2011 AAIP	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:	12 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	9340 Hrs	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, not activated	**Engine Model/Series:**	Arriel 1D1
Registered Owner:	Rocky Mountain Holdings LLC	**Rated Power:**	712 Horsepower
Operator:	Air Methods Corp.	**Operating Certificate(s) Held:**	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	CDN,302 ft msl	**Distance from Accident Site:**	
Observation Time:	02:35 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.17 inches Hg	**Temperature/Dew Point:**	21°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Camden, SC (CDN)	**Type of Flight Plan Filed:**	None
Destination:	Camden, SC (CDN)	**Type of Clearance:**	None
Departure Time:	01:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Woodward Field CDN	**Runway Surface Type:**	
Airport Elevation:	302 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Simulated forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	34.283332,-80.56472

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Steven Petrossian; FAA/FSDO; Columbia, SC Lindsay Cunningham; American Eurocopter LLC; Grand Prairie, TX
Original Publish Date:	March 27, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=79027