Aviation Investigation Final Report

Location:	Lake Charles, Louisiana	**Accident Number:**	CEN10CA352
Date & Time:	June 26, 2010, 10:15 Local	**Registration:**	N191EH
Aircraft:	Aerospatiale AS350	**Aircraft Damage:**	Substantial
Defining Event:	Hard landing	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor was preparing the commercial-rated pilot for a check ride in the helicopter equipped with skid-type landing gear. During one of three running landings to a touchdown, the flight instructor was demonstrating a practice hydraulic failure running landing and the helicopter started to get into ground resonance as he initially touched down. The flight instructor increased power to become briefly airborne and continued the maneuver to a normal practice hydraulic failure running landing. After the ground resonance experience, the flight instructor continued the flight training session for an additional 45 minutes and conducted another hydraulic failure running landing, several slope landings, and five hovering autorotations. Two of the hovering autorotations were described as rough, with an undesired drift to the front left. The flight instructor then left the airport where they had been practicing and returned to their home base airport where they conducted two straight-in autorotations and three 180-degree autorotations, all to a power recovery. After shut-down procedures were completed the two pilots were surprised when they discovered substantial damage, with buckling around the full circumference of the forward part of the tail boom and a crack in the skin at the 6 o'clock position. The flight instructor stated that he thought the damage occurred when they were conducting hovering autorotations. The two pilots reported that they were not injured.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flight instructor's inadvertent entry into ground resonance when demonstrating a hydraulic failure running landing, which resulted in substantial damage to the helicopter. Contributing to the accident was the pilot's and instructor pilot's failure to control the drift and rate of descent during the practice maneuvers.

Findings

Aircraft	Descent rate - Not attained/maintained
Aircraft	Directional control - Not attained/maintained
Personnel issues	Incorrect action performance - Instructor/check pilot
Personnel issues	Lack of action - Pilot
Personnel issues	Lack of action - Instructor/check pilot

Factual Information

History of Flight

Landing-flare/touchdown	Abnormal runway contact
Landing-flare/touchdown	Ground resonance
Other	Aircraft inspection event
Autorotation	Hard landing (Defining event)
Landing-landing roll	Abnormal runway contact

Flight instructor Information

Certificate:	Commercial	**Age:**	30,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Helicopter; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	January 13, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	October 4, 2009
Flight Time:	2383 hours (Total, all aircraft), 655 hours (Total, this make and model), 2258 hours (Pilot In Command, all aircraft), 45 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Commercial	**Age:**	48,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	May 12, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	4185 hours (Total, all aircraft), 6 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aerospatiale	**Registration:**	N191EH
Model/Series:	AS350 B2	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2505
Landing Gear Type:	Skid	**Seats:**	6
Date/Type of Last Inspection:	June 8, 2010 AAIP	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:	90 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	8980 Hrs as of last inspection	**Engine Manufacturer:**	TURBOMECA
ELT:	C126 installed, not activated	**Engine Model/Series:**	Arriel 1
Registered Owner:	ERA Helicopters LLC	**Rated Power:**	732 Horsepower
Operator:	ERA Helicopters LLC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	ERA Helicopters	**Operator Designator Code:**	U0GA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CWF,17 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	09:50 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Scattered / 2000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	32°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lake Charles, LA (LCH)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Lake Charles, LA (LCH)	**Type of Clearance:**	VFR
Departure Time:	09:36 Local	**Type of Airspace:**	

Airport Information

Airport:	Chennault International Airpor CWF	**Runway Surface Type:**	Concrete
Airport Elevation:	17 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	15	**IFR Approach:**	None
Runway Length/Width:	10701 ft / 200 ft	**VFR Approach/Landing:**	Full stop;Simulated forced landing;Stop and go;Traffic pattern

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:**	30.206388,-93.139167(est)

Administrative Information

Investigator In Charge (IIC):	Latson, Thomas
Additional Participating Persons:	Richard S Gordon; FAA Baton Rouge FSDO; Baton Rouge, LA
Original Publish Date:	December 20, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76459