Aviation Investigation Final Report

Location:	HILO, Hawaii	**Accident Number:**	LAX01LA016
Date & Time:	October 13, 2000, 08:45 Local	**Registration:**	N532BH
Aircraft:	Aerospatiale AS350-BH	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The tail boom of the helicopter bent downward during landing following a practice hovering autorotation. The pilot reported that the accident occurred following their third hovering autorotation landing. He said that the touchdown was acceptable and would have met check ride criteria. About 2 seconds after touchdown there was "an obvious component failure" felt throughout the airframe, accompanied by severe vibrations and "audible and physical indications" of failure. After exiting the aircraft, the pilot expected to find a problem in the main rotor head and was surprised to find the tail boom bent downward at the midpoint. A postaccident examination of the helicopter revealed that the tail boom was fabricated from skins of thickness 0.025 inches, as opposed to a skin thickness of 0.032 inches identified in the structural repair manual. The helicopter records showed that the tail boom was originally installed on the (new) helicopter at the factory and had acquired 14,053 hours in service.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Inadequate maintenance by the helicopter manufacturer during manufacture, which installed skins of inadequate thickness on the tail boom. A factor in the accident was the failure of the manufacturer's quality control system to detect the inadequate thickness.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: LANDING

Findings
1. FUSELAGE,SKIN - IMPROPER
2. MISC ROTORCRAFT,TAIL BOOM - BENT
3. MISC ROTORCRAFT,TAIL BOOM - BUCKLED
4. (C) MAINTENANCE - IMPROPER - MANUFACTURER
5. MATERIAL INADEQUATE,IMPROPER - MANUFACTURER
6. (F) INADEQUATE QUALITY CONTROL - MANUFACTURER

Factual Information

On October 13, 2000, at 0845 hours Hawaiian standard time, an Aerospatiale AS350-BH, N532BH, was substantially damaged when the tail boom was bent downward during landing following a practice hovering autorotation at Hilo International Airport, Hilo, Hawaii. The commercial certificated flight instructor and the airline transport certificated pilot being instructed were not injured. Visual meteorological conditions prevailed for the local area training flight, operated by Blue Hawaiian Helicopters under 14 CFR Part 91. The flight departed from Hilo at 0825, and no flight plan was filed.

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Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	45,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	November 18, 1999
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	16295 hours (Total, all aircraft), 7116 hours (Total, this make and model), 154 hours (Last 90 days, all aircraft), 43 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aerospatiale	**Registration:**	N532BH
Model/Series:	AS350-BH AS350-BH	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2494
Landing Gear Type:	Skid	**Seats:**	6
Date/Type of Last Inspection:	September 18, 2000 100 hour	**Certified Max Gross Wt.:**	4630 lbs
Time Since Last Inspection:	68 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	14053 Hrs	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	ARRIEL 1B
Registered Owner:	HELICOPTER CONSULTANTS OF MAUI	**Rated Power:**	641 Horsepower
Operator:	BLUE HAWAIIAN HELICOPTERS	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	HCMA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	HTO ,38 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Scattered / 1400 ft AGL	**Visibility**	6 miles
Lowest Ceiling:	Broken / 3200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	75°C / 72°C
Precipitation and Obscuration:	N/A - None - Rain		
Departure Point:	, HI (ITO)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	08:25 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	HILO INTERNATIONAL ITO	**Runway Surface Type:**	Grass/turf
Airport Elevation:	38 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	0	**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:**	19.689311,-155.08052(est)

Administrative Information

Investigator In Charge (IIC):	Parker, Richard
Additional Participating Persons:	ROBERT S CHRISTIANSEN; HONOLULU , HI
Original Publish Date:	July 15, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=50492