

Aviation Investigation Final Report

Location:	FALL RIVER, Massa	chusetts	Accident Number:	BF093LA149
Date & Time:	September 2, 1993,	08:30 Local	Registration:	N8447
Aircraft:	LACH	BENSEN B-8M	Aircraft Damage:	Substantial
Defining Event:			Injuries:	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal			

Analysis

AS THE PILOT WAS FLARING TO LAND, THE ROTOR CONTROL ARM (CONTROL STICK) FAILED AT A LOCATION JUST ABOVE THE PILOT'S HEAD. THE GYROCOPTER THEN ROLLED OVER AND CRASHED. A METALLURGICAL EXAMINATION REVEALED THE CONTROL ARM HAD FAILED FROM FATIGUE. THE FATIGUE ORIGINATED WHERE THE CONTROL ARM HAD BEEN CHAFED BY A LOOSE CLAMP.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: FATIGUE FAILURE OF THE GYROCOPTER'S MAIN ROTOR CONTROL ARM. FACTORS RELATED TO THE ACCIDENT WERE: A LOOSE CLAMP ON THE ROTOR CONTROL ARM, DUE TO INADEQUATE MAINTENANCE OR INSPECTION, WHICH RESULTED IN CHAFING OF THE CONTROL ARM.

Findings

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

Findings

1. (F) MAINTENANCE, INSPECTION - INADEQUATE - COMPANY/OPERATOR MANAGEMENT

2. (F) ROTORCRAFT FLIGHT CONTROL - LOOSE

3. (F) ROTORCRAFT FLIGHT CONTROL - CHAFED

4. (C) ROTORCRAFT FLIGHT CONTROL - FATIGUE

Occurrence #2: LOSS OF CONTROL - IN FLIGHT Phase of Operation: LANDING - FLARE/TOUCHDOWN

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER Phase of Operation: LANDING

Factual Information

On Thursday, September 2, 1993, at about 0830 EDT, a Lach Bensen B-8M, N8447, owned and operated by Walter Lach of Fall River, Massachusetts, rolled over and crashed during a landing at the Fall River Municipal Airport. The gyrocopter was substantially damaged. The pilot, who was the sole occupant, was seriously injured. Visual meteorological conditions prevailed, and no flight plan had been filed. The flight was conducted in accordance with 14 CFR 91.

The pilot reported that as he was flaring to land, the rotor control arm (control stick) failed. The gyrocopter then went out of control, the engine RPM began increasing, and the gyrocopter roller over and crashed. A post-accident examination of the gyrocopter revealed the control arm had failed in an area above the pilot's head. The fracture was 90 degrees to the longitudinal axis of the control arm.

An examination of the rotor control arm revealed that it had been manufactured from unalloyed aluminum tubing. The tubing was about one inch in diameter with a wall thickness of about 1/16 inch. Hardness of the tubing averaged 84.2 HRF, which was consistent with unalloyed aluminum.

Metallurgical examination of the rotor control arm revealed that it had failed from fatigue. Fatigue had originated in two areas on the outer diameter of the control arm, where it had been chafed by a loose clamp. Fatigue had progressed through the wall thickness of the control arm, then it continued circumferentially in both directions. The fatigue crack had progress about half way around the tube before final overstress failure occurred.

Phot information			
Certificate:	Private	Age:	76,Male
Airplane Rating(s):	None	Seat Occupied:	Center
Other Aircraft Rating(s):	Gyroplane	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medicalw/ waivers/lim	Last FAA Medical Exam:	March 17, 1992
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	617 hours (Total, all aircraft), 617 hours (Total, this make and model), 14 hours (Last 90 days, all aircraft) 5 hours (Last 30 days, all aircraft) 1 hours (Last 24 hours, all aircraft)		

Dilat Information

Aircraft and Owner/Operator Information

Aircraft Make:	LACH	Registration:	N8447
Model/Series:	BENSEN B-8M BENSEN B-8	Aircraft Category:	Gyroplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	1122
Landing Gear Type:	Tricycle	Seats:	1
Date/Type of Last Inspection:	March 9, 1993 Annual	Certified Max Gross Wt.:	580 lbs
Time Since Last Inspection:	5 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	617 Hrs	Engine Manufacturer:	CONTINENTAL
ELT:	Not installed	Engine Model/Series:	C-65
Registered Owner:	WALTER LACH	Rated Power:	65 Horsepower
Operator:	WALTER LACH	Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	100 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/ None	Turbulence Type Forecast/Actual:	/
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	21°C
Precipitation and Obscuration:	No Obscuration; No Precipitat	tion	
Departure Point:		Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	00:00 Local	Type of Airspace:	Class G

Airport Information

Airport:	FALL RIVER MUNI FLR	Runway Surface Type:	Asphalt
Airport Elevation:	193 ft msl	Runway Surface Condition:	Dry
Runway Used:	6	IFR Approach:	None
Runway Length/Width:	3950 ft / 150 ft	VFR Approach/Landing:	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	Jamison, Jerry
Additional Participating Persons:	ROBERT S LEE; BEDFORD , MA
Original Publish Date:	June 30, 1994
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=8798

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available <u>here</u>.