



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	AGUA CALIENTE, CA	<b>Accident Number:</b>	LAX91LA090
<b>Date &amp; Time:</b>	02/01/1991, 1230 PST	<b>Registration:</b>	N17S
<b>Aircraft:</b>	RIDDELL LANCAIR 235	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 Serious

**Flight Conducted Under:** Part 91: General Aviation - Personal

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## Analysis

THE AIRCRAFT WAS ON CLIMB OUT WHEN A LOUD BANG WAS HEARD, FOLLOWED BY AN ENGINE OVERSPEED THEN ENGINE STOPPAGE. AFTER THE FORCED LANDING, THE PILOTS FOUND THAT BOTH WOODEN PROPELLER BLADES HAD SEPARATED FROM THE STEEL HUB ASSEMBLY. THE PROPELLER HUB WAS REMOVED FROM THE ENGINE AND SENT TO THE MANUFACTURER FOR FUNCTIONAL ANALYSIS AND DISASSEMBLY UNDER THE SUPERVISION OF FAA INSPECTORS. THE MANUFACTURER STATED THAT ALL INTERNAL COMPONENTS WERE FUNCTIONAL, HOWEVER, THE CAM ADJUSTMENT FOR THE HIGH AND LOW PITCH STOP SETTINGS HAD BEEN ALTERED FROM THE FACTORY SETTINGS. THE BLADE BUTT ENDS RETAINED IN THE HUB WERE REMOVED AND SUBMITTED TO THE FOREST PRODUCTS LABORATORY OF THE US DEPARTMENT OF AGRICULTURE FOR ANALYSIS. ACCORDING TO THE LABORATORY THE WOODEN BLADES FRACTURED AND SEPARATED DUE TO A HYDROLYSIS INTERACTION BETWEEN THE WOOD AND THE ADHESIVE CAUSED BY EXCESS MOISTURE AND HEAT. THE HYDROLYSIS IS A CHEMICAL DECOMPOSITION PROCESS OF THE WOOD AND GLUE RELATIONSHIP.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE FAILURE OF THE PROPELLER BLADES DUE TO A WEAKENING OF THE WOOD STRUCTURE DUE TO ACID HYDROLYSIS. A FACTOR IN THE ACCIDENT WAS THE INADEQUATE MAINTENANCE OF THE PROPELLER ASSEMBLY BY ALLOWING EXPOSURE TO EXCESSIVE MOISTURE AND HEAT.

## Findings

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Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: CLIMB - TO CRUISE

### Findings

1. (C) PROPELLER SYSTEM/ACCESSORIES, BLADE - DELAMINATION
2. (C) PROPELLER SYSTEM/ACCESSORIES, BLADE - FAILURE, TOTAL
3. (F) MAINTENANCE, SERVICE OF AIRCRAFT/EQUIPMENT - INADEQUATE - OTHER MAINTENANCE PERSONNEL  
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Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

## Factual Information

### Pilot Information

<b>Certificate:</b>	Airline Transport	<b>Age:</b>	47, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Unknown
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	06/26/1990
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	1500 hours (Total, all aircraft), 400 hours (Total, this make and model), 4500 hours (Pilot In Command, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	RIDDELL	<b>Registration:</b>	N17S
<b>Model/Series:</b>	LANCAIR 235 LANCAIR 23	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	Yes
<b>Airworthiness Certificate:</b>		<b>Serial Number:</b>	OJ-1988
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	01/02/2000, Unknown	<b>Certified Max Gross Wt.:</b>	1500 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-320
<b>Registered Owner:</b>	KENNETH E. PARKS	<b>Rated Power:</b>	160 hp
<b>Operator:</b>	KENNETH E. PARKS	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0000	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	15 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:			
Departure Point:	SAN DIEGO, CA (MYF)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	1130 PST	Type of Airspace:	

## Wreckage and Impact Information

Crew Injuries:	2 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	George E Petterson	Report Date:	03/31/1993
Additional Participating Persons:			
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinquiry@ntsb.gov">pubinquiry@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).