



# National Transportation Safety Board Aviation Accident Factual Report

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<b>Location:</b>	CHERRY POINT, NC	<b>Accident Number:</b>	ATL01LA043
<b>Date &amp; Time:</b>	04/01/2001, 1400 EDT	<b>Registration:</b>	N78321
<b>Aircraft:</b>	Globe GC1B	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None

**Flight Conducted Under:** Part 91: General Aviation - Air Race/Show

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On April 1, 2001, at 1400 eastern daylight time, a Globe GC1B, N78321, registered to a private owner, lost a propeller blade in-flight while maneuvering at an air show in Cherry Point, North Carolina. The formation flight was operated by the pilot under the provisions of Title 14 CFR Part 91 with no flight plan filed. Visual weather conditions prevailed at the time of the accident. The commercial pilot was not injured, and the airplane sustained substantial damage. The flight departed Cherry Point, North Carolina, at 1350.

According to the pilot, while maneuvering in the number two position of a formation of three airplanes, a propeller blade separated from the propeller hub assembly. The second propeller blade, along with the hub assembly, subsequently separated from the engine crankshaft. The second propeller blade was subsequently recovered for examination. Examination of the airplane revealed a catastrophic engine failure as a result of a propeller blade separation. Examination also revealed part of the crankshaft was sheared at the hub attachment, and numerous engine attachment bolts were sheared.

The propeller assembly examination revealed a hub fracture that originated in the root of the second inboard retention thread of the No. 2 socket. The fracture was aligned along the trail edge side of the hub. Examination of the fracture faces revealed features consistent with fatigue cracking. The fatigue fracture propagated until it intersected the outside hub surface. According to McCauley Propeller the fatigue fracture reduced the propeller hub load carrying capacity until it was no longer a sufficient cross section to carry the centrifugal load of the propeller.

The propeller examination also revealed that it had been modified for oil-fill crack detection, in accordance with McCauley Propeller, service bulletin 182, dated July 16, 1990. However, there was no evidence of the red oil found inside the hub or on any pitch change components. No oil film was present on any of the components. The retention bearing races were rusted and brinnelled consistent with the absence of lubrication while the propeller had been in operation. The condition of the components suggests that the propeller had been drained of its red oil. A review of the aircraft records showed that the airplane was modified with a Meryl Product Supplemental Type Certificate (STC), P3EA that included the installation of a McCauley model

D2A34C67-NP/76C-2 propeller.

Reportedly, McCauley Propeller did not approve or seek the Federal Aviation Administration (FAA) approval of a specific airframe/engine/propeller installation of the D2A34C67 propeller on the Globe GC-1B aircraft. Note #9 of Type Certificate data sheet No. P3EA, list certain propeller engine combinations that are approved vibration wise for use on "Normal Category Single-Engine Tractor Aircraft". According to Merlyn Products and McCauley Propeller System, the accident propeller hub assembly was not approved for aerobatics flight. Reportedly, aerobatic usage of the accident type propeller hub assembly can increase the propeller operating stresses beyond the approved allowable limits. According to the pilot/owner, N78321 was not used for aerobatic flight. Meryln Products reported that the D2A34C67 propeller hub assembly is no longer available as part of STC P3EA.

## Pilot Information

<b>Certificate:</b>		<b>Age:</b>	58, Male
<b>Airplane Rating(s):</b>		<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>		<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>		<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	02/15/2001
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	05/15/2000
<b>Flight Time:</b>	6500 hours (Total, all aircraft), 2500 hours (Total, this make and model), 6000 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	Globe	Registration:	N78321
Model/Series:	GC1B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	2321
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	03/27/2001, Annual	Certified Max Gross Wt.:	1750 lbs
Time Since Last Inspection:	6 Hours	Engines:	1 Reciprocating
Airframe Total Time:	4968 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO 360C
Registered Owner:	MICHAEL P. KENNEDY	Rated Power:	210 hp
Operator:	MICHAEL P. KENNEDY	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	NKT, 28 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	1355 EDT	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 1000 ft agl	Visibility	6 Miles
Lowest Ceiling:	Overcast / 2000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	160°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.59 inches Hg	Temperature/Dew Point:	12°C / 10°C
Precipitation and Obscuration:			
Departure Point:	CHERRY POINT, NC (NKT)	Type of Flight Plan Filed:	None
Destination:	CHERRY POINT, NC	Type of Clearance:	None
Departure Time:	1350 EDT	Type of Airspace:	Class E

## Airport Information

Airport:	Cherry Point (NKT)	Runway Surface Type:	Asphalt
Airport Elevation:	28 ft	Runway Surface Condition:	Dry
Runway Used:	32L	IFR Approach:	None
Runway Length/Width:	8000 ft / 150 ft	VFR Approach/Landing:	Forced Landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	35.067222, -77.415556

## Administrative Information

<b>Investigator In Charge (IIC):</b>	PHILLIP POWELL
<b>Additional Participating Persons:</b>	Jim Allen; Greensboro FSDO; Greensboro, TN
<b>Investigation Docket:</b>	NTSB accident and incident docket 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:pubinq@ntsb.gov">pubinq@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> .