



# Aviation Investigation Final Report

<b>Location:</b>	PONCE, Puerto Rico	<b>Accident Number:</b>	MIA89LA229
<b>Date &amp; Time:</b>	August 23, 1989, 12:09 Local	<b>Registration:</b>	N955B
<b>Aircraft:</b>	BELL                      47G	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Instructional		

## Analysis

THE STUDENT PLT WAS ON AN APCH TO LAND ON A X-COUNTRY FLT, WHEN THE AFT TAIL ROTOR DRIVE SHAFT (PN: 47-644-187) FAILED AT ABOUT 40' AGL. HE RPRTD THE HELICOPTER BEGAN TO SPIN TO THE RIGHT, SO HE CLOSED THE THROTTLE & THE SPINNING STOPPED. HE PULLED UP ON THE COLLECTIVE TO CUSHION THE LANDING, BUT RAN OUT OF COLLECTIVE PITCH AT ABOUT 10' ABOVE THE GROUND. SUBSEQUENTLY, THE HELICOPTER TOUCHED DOWN HARD, DAMAGING THE TAIL ROTOR & TAIL BOOM. THE TAIL ROTOR DRIVE SHAFT HAD FAILED JUST FORWARD OF THE 90 DEG GEAR BOX.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: FAILURE OF THE AFT TAIL ROTOR DRIVE SHAFT.

## Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION  
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

### Findings

1. (C) ROTOR DRIVE SYSTEM, TAIL ROTOR DRIVE SHAFT - FAILURE, TOTAL  
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Occurrence #2: LOSS OF CONTROL - IN FLIGHT  
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

2. DIRECTIONAL CONTROL - NOT POSSIBLE

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Occurrence #3: FORCED LANDING

Phase of Operation: LANDING

Findings

3. AUTOROTATION - PERFORMED - PILOT IN COMMAND

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Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: LANDING

## Factual Information

### Pilot Information

<b>Certificate:</b>	Student	<b>Age:</b>	48, Male
<b>Airplane Rating(s):</b>	None	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	February 11, 1989
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	116 hours (Total, all aircraft), 77 hours (Total, this make and model), 55 hours (Pilot In Command, all aircraft), 22 hours (Last 90 days, all aircraft), 7 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	BELL	<b>Registration:</b>	N955B
<b>Model/Series:</b>	47G 47G	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	711
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	3
<b>Date/Type of Last Inspection:</b>	August 10, 1989 100 hour	<b>Certified Max Gross Wt.:</b>	2350 lbs
<b>Time Since Last Inspection:</b>	15 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	5837 Hrs	<b>Engine Manufacturer:</b>	FRANKLIN
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	6V-350
<b>Registered Owner:</b>	ESTEVEZ ARTURO	<b>Rated Power:</b>	235 Horsepower
<b>Operator:</b>	ESTEVEZ, ARTURO	<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	PSE ,22 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	11:58 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Scattered / 4000 ft AGL	<b>Visibility</b>	15 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	20 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	130°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29 inches Hg	<b>Temperature/Dew Point:</b>	33°C / 23°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	BORINQUEN , PR (BQN )	<b>Type of Flight Plan Filed:</b>	VFR
<b>Destination:</b>	(PSE )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	10:30 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	MERCEDITA PSE	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	29 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	12	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	5529 ft / 100 ft	<b>VFR Approach/Landing:</b>	Forced landing;Straight-in

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<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>	

## Administrative Information

**Investigator In Charge (IIC):** Alston, Andrew

**Additional Participating Persons:** TORRES; SAN JUAN , PR

**Original Publish Date:** September 5, 1991

**Last Revision Date:**

**Investigation Class:** [Class](#)

**Note:**

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=32486>

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