



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	TOMS RIVER, NJ	<b>Accident Number:</b>	NYC89FA093
<b>Date &amp; Time:</b>	03/01/1989, 1951 EST	<b>Registration:</b>	N40978
<b>Aircraft:</b>	PIPER PA-31-350	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None

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

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## Analysis

THE ACFT WAS CRUISING AT 8500 FT WHEN IT EXPERIENCED AN INFLT LOSS OF CONTROL. THE PLT SAID THE AUTOPILOT PITCH TRIM RAN AWAY NOSE DOWN & HE WAS UNABLE TO DISCONNECT THE AUTOPILOT PRIOR TO THE LOSS OF CONTROL. EXAM OF THE ACFT SHOWED THE LEFT ELEVATOR HORN WAS BENT DOWN & THE RIGHT ELEVATOR HORN WAS BROKEN OFF. THE AUTOPILOT WAS EXAMINED & ALL DISCONNECTS EXCEPT FOR THE ACCELEROMETER TEST FUNCTIONED PROPERLY. THE PITCH TRIM BOARD WAS FOUND IMPROPERLY INSTALLED IN THE AUTO PILOT & DID NOT MAKE CONNECTION. WITH THE ALTITUDE HOLD ENGAGED, THE AUTOPILOT WOULD HOLD THE ELEVATOR POSITION AT TIME OF ENGAGEMENT & TRIM TO KEEP THE FORCES NEUTRAL. IF THE AIRCRAFT SLOWED, IT WOULD LOSE ALTITUDE & TRIM NOSE UP. RADAR DATA SHOWED THE ACFT STARTED TO SLOW, THEN DESCENDED FROM 8500 TO 8300 FT, THEN CLIMBED TO 8900 FT. THE ACFT THEN CAME DOWN VERY RAPIDLY TO 1700 FT PRIOR TO A RECOVERY. RPRTDLY, THE PLT DID NOT TEST THE AUTOPLT BEFORE TAKEOFF.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: FAILURE OF THE PILOT TO MAINTAIN AIRSPEED AND CONTROL OF THE AIRCRAFT, AND HIS EXCEEDING THE DESIGN STRESS LIMITS OF THE AIRCRAFT. FACTORS RELATED TO THE ACCIDENT WERE: AUTOPLT MALFUNCTION DUE TO IMPROPER INSTALLATION BY MAINTENANCE PERSONNEL AND THE PILOT'S FAILURE TO PREFLIGHT THE AUTOPILOT BEFORE USING IT IN FLIGHT.

## Findings

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Occurrence #1: ALTITUDE DEVIATION, UNCONTROLLED

Phase of Operation: CRUISE

### Findings

1. (F) AUTOPILOT/FLIGHT DIRECTOR - ERRATIC
2. (F) MAINTENANCE, INSTALLATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (F) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
4. (F) AUTOPILOT - IMPROPER USE OF - PILOT IN COMMAND

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Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: CRUISE

### Findings

5. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
6. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

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Occurrence #3: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: MANEUVERING

### Findings

7. FLIGHT CONTROL, ELEVATOR - OVERLOAD
8. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND

## Factual Information

### Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Instructor	<b>Age:</b>	26, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	06/14/1988
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	2300 hours (Total, all aircraft), 300 hours (Total, this make and model), 2000 hours (Pilot In Command, all aircraft), 120 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	PIPER	<b>Registration:</b>	N40978
<b>Model/Series:</b>	PA-31-350 PA-31-350	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	31-8152199
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	8
<b>Date/Type of Last Inspection:</b>	02/25/1989, Annual	<b>Certified Max Gross Wt.:</b>	7000 lbs
<b>Time Since Last Inspection:</b>	5 Hours	<b>Engines:</b>	2 Reciprocating
<b>Airframe Total Time:</b>	4131 Hours	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-540-J2B2
<b>Registered Owner:</b>	RANGER AIR INC	<b>Rated Power:</b>	350 hp
<b>Operator:</b>	FALCON FLIGHT CENTER	<b>Operating Certificate(s) Held:</b>	On-demand Air Taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	SXCA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
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	20 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:			
Departure Point:	HARTFORD, CT (HFD)	Type of Flight Plan Filed:	None
Destination:	ATLANTIC CITY, NJ (ACY)	Type of Clearance:	
Departure Time:	1930 EST	Type of Airspace:	Class E

## Wreckage and Impact Information

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

## Administrative Information

Investigator In Charge (IIC):	ROBERT L HANCOCK	Report Date:	09/30/1991
Additional Participating Persons:	; VERO BEACH, FL ; OLATHE, KS ; PHILADELPHIA, PA		
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: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> .		

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](#).