



# Aviation Investigation Final Report

<b>Location:</b>	PADUCAH, Kentucky	<b>Accident Number:</b>	ATL87LA105
<b>Date &amp; Time:</b>	April 5, 1987, 10:00 Local	<b>Registration:</b>	N6141S
<b>Aircraft:</b>	AIR & SPACE 18A	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 Serious
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

THE PLT REPORTED THAT HE SPUN THE ROTOR UP TO 350 RPM IN PREPARATION FOR A MAXIMUM PERFORMANCE TAKEOFF. DURING TAKEOFF ROLL, THE GYROPLANE EXPERIENCED GROUND RESONANCE. THE PLT REDUCED THE THROTTLE TO IDLE, BUT THE OSCILLATIONS CONTINUED AND THE RT MAIN LDG GEAR COLLAPSED. THE ROTOR SUBSEQUENTLY STRUCK THE RUNWAY AND TORE LOOSE FROM THE GYROPLANE. THE PILOT NOTED THAT SLIGHT BARELY NOTICEABLE UNDULATIONS EXISTED IN THE PORTION OF THE RWY SURFACE USED DURING THE TAKEOFF ROLL. THE FAA APPROVED FLT MANUAL (AFM) FOR THE GYROPLANE CONTAINS NO EMERGENCY OPERATION PROCEDURES FOR GROUND RESONANCE. THE ACFT OPERATOR REPORTED THAT THE PLT WAS TAUGHT TO TAKEOFF IF SUFFICIENT ROTOR RPM WAS AVAILABLE IN THE EVENT OF GROUND RESONANCE. THE AFM STATES THAT ANY AIRSPEED MAY BE USED FOR TAKEOFF IF THE ROTOR DOES NOT DECAY BELOW 140 RPM.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

### Findings

Occurrence #1: MAIN GEAR COLLAPSED  
Phase of Operation: TAKEOFF - ROLL/RUN

Findings

1. (C) TERRAIN CONDITION - ROUGH/UNEVEN
2. (F) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - SELECTED - PILOT IN COMMAND
3. (C) REMEDIAL ACTION - INADEQUATE - PILOT IN COMMAND
4. (F) CONDITION(S)/STEP(S) NOT LISTED - MANUFACTURER
5. (F) INADEQUATE CERTIFICATION/APPROVAL,AIRCRAFT - FAA(ORGANIZATION)
6. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND
7. (F) LANDING GEAR,MAIN GEAR - OVERLOAD
8. (F) LANDING GEAR,MAIN GEAR - FAILURE,TOTAL

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Occurrence #2: DRAGGED WING, ROTOR, POD, FLOAT OR TAIL/SKID  
Phase of Operation: TAKEOFF - ROLL/RUN

Findings

9. TERRAIN CONDITION - RUNWAY

## Factual Information

### Pilot Information

<b>Certificate:</b>	Airline transport; Commercial; Flight instructor	<b>Age:</b>	59, Male
<b>Airplane Rating(s):</b>	Single-engine land; Single-engine sea; Multi-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	Airship; Gyroplane; Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Instrument airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	September 26, 1986
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	4035 hours (Total, all aircraft), 27 hours (Total, this make and model), 3812 hours (Pilot In Command, all aircraft), 4 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	AIR & SPACE	<b>Registration:</b>	N6141S
<b>Model/Series:</b>	18A 18A	<b>Aircraft Category:</b>	Gyroplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	18-49
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	February 4, 1987 100 hour	<b>Certified Max Gross Wt.:</b>	1800 lbs
<b>Time Since Last Inspection:</b>	5 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	234 Hrs	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	O-360-A1D
<b>Registered Owner:</b>	FARRINGTON AIRCRAFT CORP.	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	
<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>	,338 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	10:00 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	25 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	340°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30 inches Hg	<b>Temperature/Dew Point:</b>	19°C / -1°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>		<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>		<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	10:00 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	FARRONGTON AIRPARK KY29	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	338 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	4	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	2985 ft / 60 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious	<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 Serious	<b>Latitude, Longitude:</b>	37.069858,-88.629722(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Strickland, Scott
<b>Additional Participating Persons:</b>	RICHARD K CHESSON; LOUISVILLE , KY
<b>Original Publish Date:</b>	March 10, 1988
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=7403">https://data.ntsb.gov/Docket?ProjectID=7403</a>

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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 [here](#).