



# Aviation Investigation Final Report

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<b>Location:</b>	GRAEFENBURG, Kentucky	<b>Accident Number:</b>	NYC92GA147
<b>Date &amp; Time:</b>	August 7, 1992, 11:10 Local	<b>Registration:</b>	N50KY
<b>Aircraft:</b>	SIKORSKY S-76A	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	5 Serious, 1 Minor
<b>Flight Conducted Under:</b>	Part 91: General aviation - Public aircraft		

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## Analysis

BEFORE FLT, THE COPLT BGN A PREFLT INSPN, & SUBSEQUENTLY, THE HELICOPTER WAS MVD FM THE HANGAR TO THE TERMINAL, WHERE A WITNESS OBSERVED THE ENG COWLING OPEN. THE PLT ALSO MADE A WALKAROUND VISUAL INSPN OF THE HELICOPTER BFR FLT. NEITHER OF THE FLT CREW NOTED ANY DISCREPANCY. ABT 1 MIN & 40 SEC AFTER TAKEOFF, THE FLT CREW HEARD A NOISE, FLWD BY LOSS OF DRCTNL CTL; 3 OF THE PSGRS NOTED THE ODOR OF SOMETHING OVERHEATING. AN AUTOROTATION & LANDING WERE MADE ON HILLY TRRN, WHERE THE HELICOPTER CAME TO REST IN A RAVINE AGAINST A TREE. DRG AN EXAM, THE 2 LEFT SIDE ENG COWLING LATCHES WERE FND OPEN; ALSO, THE LEFT SIDE OF THE AFT ENG COWLING WAS OPEN. THERE WAS EVIDENCE THAT DURING FLT, THE LEFT SIDE OF THE COWLING CONTACTED THE MAIN ROTOR BLADES; THE COWLING THEN MADE CONTACT WITH SECTION II OF THE TAIL ROTOR DRIVESHAFT. FRICTION BTN THE COWLING & THE DRIVESHAFT RESULTED IN LOCALIZED HIGH TEMPERATURE & THE TAIL ROTOR SHAFT FAILED AT THAT LOCATION. ONE OF THE 4 TAIL ROTOR BLADES SEPARATED DURING THE OCCURRENCE.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: AN INADEQUATE PREFLIGHT INSPECTION BY THE FLIGHT CREW BY FAILING TO ASSURE THAT ALL FOUR OF THE ENGINE COWLING LATCHES WERE PROPERLY SECURED, WHICH RESULTED IN SUBSEQUENT FAILURE OF SECTION II OF THE TAIL ROTOR DRIVESHAFT AFTER THE COWLING CONTACTED THE MAIN ROTOR BLADES AND TAIL ROTOR DRIVESHAFT.

## Findings

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

Phase of Operation: CRUISE

### Findings

1. (C) AIRCRAFT PREFLIGHT - INADEQUATE
  2. (C) ENGINE COMPARTMENT - NOT SECURED
  3. (C) ROTOR DRIVE SYSTEM, TAIL ROTOR DRIVE SHAFT - FAILURE, TOTAL
  4. ROTOR SYSTEM, TAIL ROTOR BLADE - SEPARATION
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Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

### Findings

5. AUTOROTATION - PERFORMED - PILOT IN COMMAND
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Occurrence #3: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: LANDING

### Findings

6. TERRAIN CONDITION - MOUNTAINOUS/HILLY
7. OBJECT - TREE(S)

## Factual Information

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	45, Male
<b>Airplane Rating(s):</b>	None	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Helicopter	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	January 24, 1992
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	6070 hours (Total, all aircraft), 680 hours (Total, this make and model), 5800 hours (Pilot In Command, all aircraft), 125 hours (Last 90 days, all aircraft), 42 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	SIKORSKY	<b>Registration:</b>	N50KY
<b>Model/Series:</b>	S-76A S-76A	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	760059
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	8
<b>Date/Type of Last Inspection:</b>	May 29, 1992 100 hour	<b>Certified Max Gross Wt.:</b>	10500 lbs
<b>Time Since Last Inspection:</b>	46 Hrs	<b>Engines:</b>	2 Turbo shaft
<b>Airframe Total Time:</b>	3950 Hrs	<b>Engine Manufacturer:</b>	ALLISON
<b>ELT:</b>	Installed	<b>Engine Model/Series:</b>	250-C30
<b>Registered Owner:</b>	COMMONWEALTH OF KENTUCKY	<b>Rated Power:</b>	650 Horsepower
<b>Operator:</b>		<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>	LEX ,980 ft msl	<b>Distance from Accident Site:</b>	20 Nautical Miles
<b>Observation Time:</b>	10:50 Local	<b>Direction from Accident Site:</b>	115°
<b>Lowest Cloud Condition:</b>	Scattered / 10000 ft AGL	<b>Visibility</b>	4 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	7 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	140°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30 inches Hg	<b>Temperature/Dew Point:</b>	22°C / 19°C
<b>Precipitation and Obscuration:</b>	N/A - None - Haze		
<b>Departure Point:</b>	FRANKFORT , KY (FFT )	<b>Type of Flight Plan Filed:</b>	Company VFR
<b>Destination:</b>	FT KNOX , KY (FTK )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	11:06 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>		<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	0	<b>IFR Approach:</b>	
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious, 1 Minor	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	4 Serious	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	5 Serious, 1 Minor	<b>Latitude, Longitude:</b>	38.190685,-84.859603(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Yurman, Alan
<b>Additional Participating Persons:</b>	DAVE KING; LOUISVILLE , KY ED MONHOLLEN/BILL MCCAULE; STRATFORD , KY DON LIVINGSTON; FRANKFORT , KY RICHARD TAYLOR; INDIANAPOLIS , IN
<b>Original Publish Date:</b>	September 20, 1993
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=37077">https://data.nts.gov/Docket?ProjectID=37077</a>

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