



National Transportation Safety Board Aviation Accident Final Report

Location:	ANN ARBOR, Michigan	Accident Number:	CHI95FA050
Date & Time:	December 1, 1994, 10:07 Local	Registration:	N1QF
Aircraft:	Agusta A109A II	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

THE FLIGHT HAD BEEN AIRBORNE FOR TWO MINUTES WHEN THE PILOT REQUESTED LANDING PERMISSION STATING, IN PART, 'I'D LIKE TO PROCEED INBOUND...SINGLE ENGINE LANDING, PLEASE.' HE CANCELLED THIS REQUEST IMMEDIATELY AND REPORTED '...I'M GOING DOWN AT THIS TIME.' HE THEN CONTACTED THE DISPATCH WHERE HE HAD DEPARTED AND REPORTED THE POSITION OF HIS INTENDED LANDING. AFTER THIS RADIO CALL, 23 TO 25 SECONDS PASSED BEFORE HIS LAST COMMUNICATION INDICATING AN IMMINENT CRASH. WITNESSES REPORTED THAT THE HELICOPTER WAS NEARLY SILENT JUST PRIOR TO GROUND IMPACT AND THAT THERE WAS NO ENGINE NOISE AT ALL AFTER IMPACT. SUBSEQUENT INVESTIGATION REVEALED THAT NEITHER ENGINE WAS OPERATING AT THE TIME OF THE ACCIDENT; HOWEVER, NO MECHANICAL REASON FOR THE LOSS OF ENGINE POWER OR NECESSITY FOR AN ENGINE SHUTDOWN BY THE PILOT WAS DETERMINED. DAMAGE TO THE ROTOR SYSTEM INDICATED THAT RPM WAS EXTREMELY LOW AT THE TIME OF IMPACT.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to obtain/maintain a successful autorotation. Factors were: a loss of engine power of one engine for undetermined reasons, and the pilot's shutdown of the wrong engine.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: CRUISE - NORMAL

Findings

1. 1 ENGINE
 2. (F) REASON FOR OCCURRENCE UNDETERMINED
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Occurrence #2: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: CRUISE - NORMAL

Findings

3. 1 ENGINE
 4. (F) WRONG ENGINE SHUTDOWN - PILOT IN COMMAND
-

Occurrence #3: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #4: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings

5. (C) AUTOROTATION - NOT OBTAINED/MAINTAINED - PILOT IN COMMAND
-

Occurrence #5: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On December 1, 1994, about 1007 central standard time, an Agusta SPA A109A II, N1QF, operated by Metro Aviation, Inc., was destroyed when it collided with the terrain near Ann Arbor, Michigan. The commercial pilot and two passengers (medical evacuation crew members) were fatally injured. The 14 CFR Part 91 positioning flight departed the St. Joseph Hospital in visual meteorological conditions about 1003, en route to Howell, Michigan. The purpose of the flight was to pick up a patient at Howell, and return to St. Joseph's Hospital.

Prior to the morning of the accident N1QF was designated as the standby helicopter; however, the primary helicopter was scheduled for maintenance on the day of the accident, therefore essential equipment had to be moved from the primary craft to N1QF. Before the transfer could be accomplished, N1QF was required to prepare for dispatch on the accident flight. What was later described by a witness as a "hasty dispatch," necessitated a hurried departure to accomplish the transfer of equipment, complete a preflight, and other items necessary for a medical evacuation flight. The witness to the departure stated that a complete preflight was accomplished by the crew; although this witness did not actually have an opportunity to watch the entire preparation. The witness indicated that the start of the engines was "normal," with no delay in the engine start up. The flight departed at 1003.

At 1005 N1QF contacted the Ann Arbor, Federal Aviation Administration (FAA) Control Tower (ATCT), giving its position as one and one half miles east of St. Joseph's Hospital and requesting landing permission stating, in part, "I'd like to proceed inbound.. single engine landing, please." Six seconds later the flight was cleared into the class D surface area. Seven seconds later, N1QF responded stating, "Ah, disregard, I'm going down at this time." No additional information was transmitted, nor was the reason for the single engine landing stated. The pilot did not declare an emergency nor did he request assistance.

The pilot then contacted the dispatcher, at St. Joseph's Hospital and stated that he was going to land, "north of the university." The dispatcher requested the information be repeated and the pilot did so. There was no indication of any need for assistance, the nature of any emergency situation, nor was there any discussion of difficulties being experienced by the flight. Twenty-six seconds after the pilot's repeating the location to the dispatcher, he made a final transmission, indicating a crash was imminent.

Eyewitnesses observed the accident helicopter during the final few seconds of the flight. Two witnesses stated that the helicopter was trailing smoke from the area of the engines. One witness indicated that the helicopter was maneuvering just prior to the impact and that during the final descent which he described as "dropped like a stone," it appeared the rotor blades were "not turning hardly at all." Witnesses reported that the helicopter was nearly silent just prior to ground impact and that there was no engine noise at all after impact.

OTHER DAMAGE

One small tree was damaged during the impact with the terrain.

PERSONAL INFORMATION

The pilot was born May 27, 1952, and was the holder of a commercial helicopter certificate number 2157108, with instrument helicopter privileges. At the time of the accident he had 5,000 hours flight time, with 3,500 hours of pilot in command time and 300 hours in the make and model of helicopter involved in the accident. He held a second class medical certificate issued June 9, 1994. His most recent biennial flight review was accomplished in an Agusta A109 on October 23, 1994.

AIRCRAFT INFORMATION

The helicopter was an Agusta SPA A109A II, serial number 7311, N1QF. The helicopter was maintained on an Approved Inspection Program. The most recent inspection occurred on June 13, 1994, with a total time in service of 1,870 hours. The helicopter had accumulated 57 hours since the inspection, at the time of the accident. The helicopter was last fueled on November 22, 1994.

WRECKAGE AND IMPACT INFORMATION

The helicopter impacted flat terrain in a commercial area, on a northeast heading. Ground scars and eyewitness reports indicated that the helicopter impacted in a near vertical direction with little forward motion. The landing gear was found in the extended (gear down) position. The helicopter was lying on its left side. The fuselage was crushed to about one-half the original height. The tail boom was partially separated from the fuselage from ground impact and impact with a small tree. Three of the main rotor blades were intact with little bending. The tail rotor assembly had impact damage only with no rotational damage evident. The main rotor head exhibited marks and damage consistent with blade coning impact.

The rotor system was inspected during the on scene phase of the investigation including the main and tail rotors, transmission and gearbox. No discrepancies were noted.

Both engines and the transmission exhibited little impact damage and were removed for further study. During the on-scene investigation both engines rotated and there was continuity throughout the gear train. No damage was visible in the output drive shafts on either engine. The fuel control pointer on the number 1 engine was at 30 degrees with the throttle handle at idle. The fuel control pointer on the number 2 engine was at 85 degrees with the throttle handle about mid-range. Fuel vacuum checks were done with engine number 1 having no leaks and engine number 2 having a leak traced to the fuel pump assembly.

MEDICAL AND PATHOLOGICAL INFORMATION

A post mortem examination of the pilot was conducted by the Washtenaw County (Michigan) Medical Examiner, on December 2, 1994. No contributing pre-existing pathology was found.

A toxicological examination of specimens from the pilot proved negative for those drugs

screen.

TESTS AND RESEARCH

Fuel samples from the fueling source were found to be free of water and within limits for Jet-A1.

Fuel and oil samples from the helicopter were tested at the Allison lab and were found to be within limits for Jet-A1 fuel and MIL-L-23699E oil.

An examination of light bulb filaments revealed stretched filaments in the "Master Warning," "Master Caution," "Engine #1 Low RPM," "Engine #2 Low RPM." and "Low Rotor RPM" panels.

Both engines were test run at Allison on a production test stand on January 11, 1995. Number 1 engine was found to be within limits. Number 2 engine experienced excessive compressor vibration, therefore, the control components from that engine were tested on the number 1 engine which had been successfully run. The engine operation did not reach the limits falling about 2% below top limits.

The compressor for engine number 2 was disassembled and inspected. A visual inspection revealed unusual balance marks. The rotor was check balanced and it measured at 0.006 oz-in of unbalance. The limit should have been 0.001 oz-in. Although the exact mode of unbalance was not determined, experienced sources indicated that the unusual marks could not be associated with normal operation of the engine; however could be associated with impact artifact.

The individual components (originally) from engine number 2 were tested on October 11, 1995, and the fuel control was found to fall about 2% below the top limit. There was nothing found that would have prevented the engine from operating normally at the cruise setting.

Throughout the on-scene investigation and during the testing of components, nothing was found to indicate any reason that an engine should stop running inflight. Nothing was found in either engine to indicate an indication necessitating a need to manually shut down an engine inflight.

ADDITIONAL INFORMATION

Parties to the investigation were the FAA Flight Standards District Office, Belleville, Michigan; Agusta Aerospace Corporation, Philadelphia, Pennsylvania; Allison, Indianapolis, Indiana; Allied Signal Aerospace, South Bend, Indiana; and Metro Aviation Inc., Shreveport, Louisiana.

The helicopter wreckage was released to representatives of the owner on December 16, and December 22, 1994 and January 9, 1996.

Pilot Information

Certificate:	Commercial	Age:	42, Male
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	June 9, 1994
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	5000 hours (Total, all aircraft), 300 hours (Total, this make and model), 3500 hours (Pilot In Command, all aircraft), 32 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Agusta	Registration:	N1QF
Model/Series:	A109A II A109A II	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	7311
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	June 13, 1994 AAIP	Certified Max Gross Wt.:	5730 lbs
Time Since Last Inspection:	57 Hrs	Engines:	2 Turbo shaft
Airframe Total Time:	1890 Hrs	Engine Manufacturer:	ALLISON
ELT:	Not installed	Engine Model/Series:	250-C20B
Registered Owner:		Rated Power:	420 Horsepower
Operator:		Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	MIDWEST MED FLIGHT	Operator Designator Code:	HDNA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Unknown	Visibility	10 miles
Lowest Ceiling:	Broken / 12000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	12 knots / 16 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	-1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	, MI (NONE)	Type of Flight Plan Filed:	Company VFR
Destination:	HOWELL , MI (NONE)	Type of Clearance:	None
Departure Time:	10:03 Local	Type of Airspace:	Class D

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal	Latitude, Longitude:	42.33028,-83.700233(est)

Administrative Information

Investigator In Charge (IIC): Wilson, Stephen

Additional Participating Persons: RICHARD G GASTRICH; BELLEVILLE , MI
PAOLO FERRERI; PHILADELPHIA , PA
SCOTT S SCHEURICH; INDIANAPOLIS , IN
MILTON K GELTZ; SHREVEPORT , LA

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Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=9721>

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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](#).