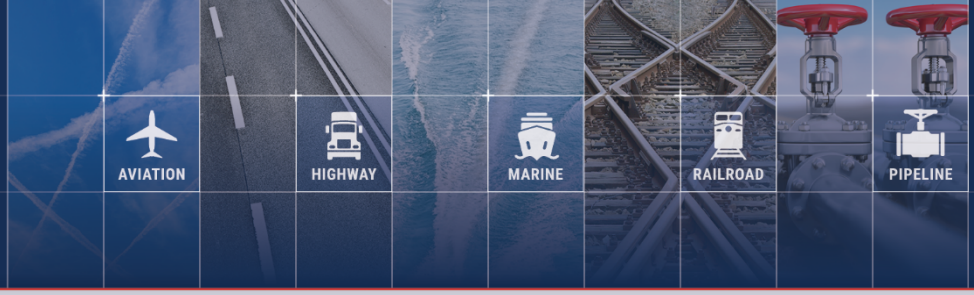

Aviation Investigation Final Report

Location:	RICHFIELD, Ohio	**Accident Number:**	NYC94FA014
Date & Time:	October 19, 1993, 16:50 Local	**Registration:**	N1605Z
Aircraft:	MCDONNELL DOUGLAS 369E	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal, 1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation		

Analysis

SEVERAL WITNESSES DRIVING IN THEIR CARS OBSERVED THE HELICOPTER PRIOR TO IMPACT AND SAID THEY SAW THE HELICOPTER HEADING SOUTHBOUND AT A LOW ALTITUDE IN FOG, TURN TO A WESTERLY HEADING, REVERSE DIRECTION ABOUT 120 DEGREES, DESCEND AND STRIKE WIRES THAT WERE IN THE HELICOPTER'S FLIGHT PATH. A WITNESS WHO WAS A PILOT SAID, '...AS THE CRAFT DESCENDED I COULD SEE THAT THE OUTLINE OF THE FUSELAGE WAS BLURRED BY MISTY RAIN AT THE LOWER ALTITUDE (MARGINAL IFR AT THE MOMENT).' AFTER STRIKING THE WIRES THE TAIL ROTOR SEPARATED, THE HELICOPTER SPUN COUNTER CLOCKWISE UNTIL THE MAIN ROTOR BLADES IMPACTED THE GROUND. EXAMINATION OF THE HELICOPTER AND ENGINE REVEALED NO DISCREPANCIES.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: AN IN FLIGHT COLLISION WITH POWER LINES WHILE THE PILOT WAS MANEUVERING THE HELICOPTER AT A LOW ALTITUDE. A FACTOR IN THIS ACCIDENT WAS REDUCED VISIBILITY DUE TO FOGGY WEATHER CONDITIONS.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings
1. (F) WEATHER CONDITION - FOG

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING - TURN TO REVERSE DIRECTION

Findings
2. (C) ALTITUDE - INADEQUATE - PILOT IN COMMAND
3. CLEARANCE - INADEQUATE - PILOT IN COMMAND
4. (C) OBJECT - WIRE,TRANSMISSION

Factual Information

HISTORY OF FLIGHT

On October 19, 1993, about 1650 eastern daylight time, a McDonnell Douglas 369E, helicopter, N1605Z, piloted by Mr. Ronald D. Ramsey, and operated by MPW Industrial Services Inc., collided with a wire while maneuvering near Richfield, Ohio. The helicopter was destroyed. There were three occupants on the helicopter at the time of the accident. The pilot was seriously injured, one passenger was fatally injured, and one passenger received minor injuries. Instrument meteorological conditions prevailed at the time, and no flight plan had been filed. The flight was being conducted under 14 CFR 91.

Several witnesses driving in their cars observed the helicopter prior to impact and gave written statements to the Ohio State Police. Mr Earl Lloyd was driving south on [Interstate Highway] I-77, and said he saw the helicopter, "...heading southbound...about 250 feet to 300 feet above[his location]."

Mr. William J. Roche wrote in his statement:

I was driving down I-271 and noticed the helicopter very low...and was in heavy fog. The copter turned around pretty quick and lowered even more. The copter then hit a wire and started spinning like a top. The fall was straight down....

While traveling in his car, Mr. Jerry Smith saw the helicopter when he was exiting I-77 north, onto the ramp of I-271 north and wrote:

...I noticed a helicopter hit a power line in front of me. Part of the helicopter came off independent of the main unit. It went straight down to the right of the exit ramp on the grassy ravine....

Mr. Terry Dewald, a pilot and an ATF [Alcohol-Tobacco-Firearm] Special Agent, was travelling southbound on I-77, heard and visually saw the helicopter overhead, and to the left of his vehicle. Mr. Dewald wrote a statement for the State Police and was interviewed by the NTSB IIC, on October 20, 1993. According to Mr. Dewald, "The chopper was flying southbound at a very low altitude and began to proceed westbound." Mr. Dewald said the helicopter proceeded in a westerly direction, and flew about 100 feet over the power cables, that crossed the interstate north and south. The helicopter reversed direction of flight to the left, approximately 120 degrees. According to Mr. Dewald's written statement:

...[after the left turn the helicopter] began to follow the I-271 eastbound...I saw the craft began to wobble from side to side and it also made a sudden yet semi- controlled

descent...as the craft descended I could see that the outline of the fuselage was blurred by misty rain at the lower altitude (marginal IFR at the moment)...[I] thought the chopper was trying to make an emergency landing next to the ramp. I could then see the copper contact an overhead electrical cable and I observed debris come loose from the craft which immediately began to auto-rotate [spin] counter- clockwise...until I lost sight of the craft over the ramp embankment...I observed the chopper had crashed on a steep embankment....

According to the pilot's statement on the NTSB Form 6120.1/2, dated October 29, 1993, the flight departed the MPW, corporate branch office, helicopter pad about 2 miles south of Burke Lake Front Airport at approximately 1630. During the 5 to 6 hour wait on the ground the pilot said he monitored the weather from, "Lake Front's ATIS and NOAA weather radio." Approximately 1 hour prior to departure, the pilot said he telephone Cleveland Flight Service Station (FSS) for a full weather briefing.

Mr. Ramsey wrote that he followed I-77 south, at an altitude of approximately 1800 feet, and at a speed of "125 knots." According to Mr. Ramsey's statement, "the visibility was very good (10+ miles) to the southwest." When reaching the intersection I-271 he turned to a westerly heading and the weather deteriorated. Mr. Ramsey wrote:

...after starting down I-271 I say that the weather ahead was getting lower, either through rain showers or lower ceiling. Because the weather ahead was not acceptable to me I decided to turn around and head back to I-77 to the better visibility...I remember beginning the turn to reverse my course. At this point I remember having some type of controllability problem, but I can not remember the exact details. I faintly remember rotation during the incident but I do not remember the impact.

Mr. Walter Bridgeman, was riding in the right rear seat of the helicopter at the time of the accident, and wrote in his statement:

The aircraft went to the left and then to the right. Then I heard Bill Clark [passenger in the front right seat] say to the pilot watch the wires. Then I heard the rotor hit the wire and then the aircraft went down.

The accident occurred during the hours of daylight approximately 41 degrees, 13 minutes north, and 81 degrees, 37 minutes west.

PERSONNEL INFORMATION

Mr. Ronald D. Ramsey was born on October 20, 1937. He held Airline Transport Pilot Certificate, No. 1631261, with airplane multiengine and airplane single engine land, helicopter ratings, flight instructor, airplane single and multiengine land, helicopter, and instrument airplane.

Mr. Ramsey was issued a Second Class Airman Medical Certificate on May 25, 1993, with limitations, must wear corrective lenses.

Mr. Ramsey's records showing his flight hours revealed that at the time of the accident he had logged a total of 16,027 flight hours, and 4,130 flights hours in McDonnell Douglas helicopters.

METEOROLOGICAL INFORMATION

The nearest weather reporting station to the accident site was located at the Akron-Canton Airport approximately 22 nautical miles, southeast of the crash site. The 1650 special weather observation was reported as; ceilings measured 300 broken, 2400 overcast; visibility 3/4 mile-fog; temperature 50 degrees F; dew point 50 degrees F; wind 060 degrees; 7 knots; altimeter 30.10 inches Hg.

WRECKAGE AND IMPACT INFORMATION

The wreckage was examined at the accident site on October 19-20, 1993. The top wire of 4 wires located 79 feet above the ground was found broken. The wires were strung between 2 towers and ran north and south. The height of the north tower was 100 feet above the ground and the height of the south tower was 125 feet above the ground. According to the West-Akron-Pleasant Valley, Power Company, the diameter of the wire was .530 inches, consisting of ACSR aluminum conductor steel reinforced, with 12 strands of aluminum and 7 strands of steel.

The tail rotor and tailboom were found separated. Ground scars in the grass were observed were the main rotor blades contacted the ground, at location approximately 176 feet east of were the broken wire was located. The helicopter came to rest down approximately a 40 degree grassy incline, 194 feet east of the broken wire, and approximately 58 feet south of the road surface.

The helicopter came to rest on it's right side with nose heading in an easterly direction. Sections of the tail rotor were found approximately 100 feet north and west of the broken wire.

The tailboom exhibited wire strike marks on the forward portion at flight station [FS] 44.65 and waterline [WL] 22.75. The lower front portion of the vertical stabilizer was crushed and the skin had separated when it made contact with the wire. The separated piece of skin displayed wire strike marks (See NTSB photo #1, and Allison photo #15). The horizontal stabilizer had remained attached to the vertical stabilizer, and displayed impact damage to the left leading edge. The tailboom had separated at FS 273.

Examination of the cyclic control sticks revealed that they were both fractured at the base. Continuity of the cyclic system was observed from the fractures through the lateral idler bellcrank up to and including the main rotor system.

The left side collective [pilots] was damaged, and was broken at the base. The right side collective was intact and in the full up position. Continuity to the collective system was established up to and including the rotor system. Both throttles were in the off position.

Both sets of anti-torque pedals had separated from the bulkhead due to impact damage to the mounting brackets. Anti-torque control continuity was established from the floor mounted control rod, through the bellcrank to FS 140 where the control rod at FS 120 was found broken. The control rod was intact from the break through the FS 142 bellcrank until FS 273 where the rod was broken when the tailboom separated. The control rod remained intact from FS 273 to the FS 284 bellcrank which displayed no damage, and remained attached to the tail rotor gearbox.

The main transmission, transmission drive shafts, tail rotor drive shaft, tail rotor gearbox were examined, and no discrepancies were found.

The engine was removed from the helicopter for further examination.

TEST AND RESEARCH

At the request of the NTSB, and under the supervision of the FAA, the engine from N1605Z was test run at Allison Engine's facilities, Indianapolis, Indiana, on December 14-15, 1993.

Visual examination of the engine revealed no discrepancies. The engine was subject to a three point performance calibration and power transients during the test runs. Allison reported, "...the engine was found to be below minimum allowable limits for h.p. at normal cruise, max continuous and 2 1/2 minute power." On the second day of the test run the engine was boroscoped by accessing the first stage turbine nozzle/wheel areas through the fuel nozzle bore. According to Allison's report, "...a substantial buildup of what appeared to be fire extinguisher agent was noted to be laying in the bottom of the combustion liner."

ADDITIONAL INFORMATION

The wreckage was released on October 21, 1993, to insurance adjuster, Mr. Sean Hill, representing the owner's Insurance Company.

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	May 25, 1993
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	16027 hours (Total, all aircraft), 4130 hours (Total, this make and model), 15134 hours (Pilot In Command, all aircraft), 214 hours (Last 90 days, all aircraft), 71 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MCDONNELL DOUGLAS	**Registration:**	N1605Z
Model/Series:	369E 369E	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	0272E
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	June 16, 1993 Annual	**Certified Max Gross Wt.:**	3000 lbs
Time Since Last Inspection:	55 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	1056 Hrs	**Engine Manufacturer:**	ALLISON
ELT:	Not installed	**Engine Model/Series:**	250-C20B
Registered Owner:	MPW INDUSTRIAL SERVICES INC.	**Rated Power:**	420 Horsepower
Operator:	MPW INDUSTRIAL SERVICES INC.	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	CAK ,1228 ft msl	**Distance from Accident Site:**	22 Nautical Miles
Observation Time:	16:50 Local	**Direction from Accident Site:**	160°
Lowest Cloud Condition:	Thin Overcast / 300 ft AGL	**Visibility**	0.75 miles
Lowest Ceiling:	Overcast / 2400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	10°C / 10°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	CLEVELAND (NONE)	**Type of Flight Plan Filed:**	None
Destination:	HEBRON (NONE)	**Type of Clearance:**	Cruise
Departure Time:	16:30 Local	**Type of Airspace:**	

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal, 1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious, 1 Minor	**Latitude, Longitude:**	41.230247,-81.630432(est)

Administrative Information

Investigator In Charge (IIC):	Yurman, Alan
Additional Participating Persons:	ROBERT TAYLOR; CLEVELAND , OH JOHATHAN D KURTZ; MESA , AZ
Original Publish Date:	December 2, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=38659