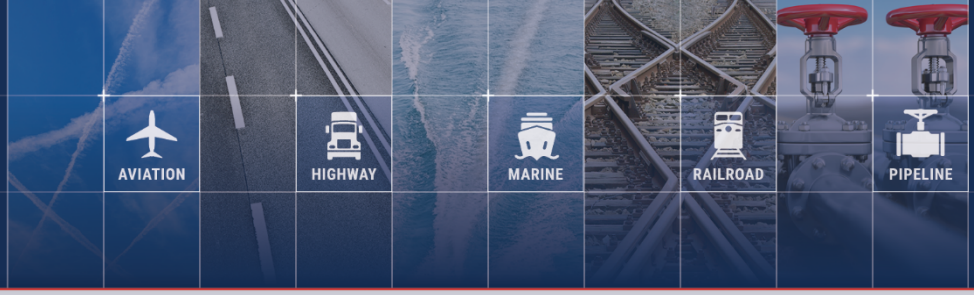

Aviation Investigation Final Report

Location:	WEST PLAINS, Missouri	**Accident Number:**	CHI93FA249
Date & Time:	July 10, 1993, 11:05 Local	**Registration:**	N350BA
Aircraft:	AMERICAN EUROCOPTER AS350BA	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

WITNESSES STATED EVERYTHING SEEMED NORMAL AS THE HELICOPTER CIRCLED OVERHEAD BEFORE BEGINNING THE APPROACH TO LAND IN AN OPEN FIELD AT THE FAIRGROUND. THEY REPORTED THE HELICOPTER DESCENDED TO ABOUT 10 FEET ABOVE THE GROUND, THEN TURNED RIGHT AND STOPPED. THE HELICOPTER DROPPED, TAIL LOW, TO THE GROUND, THEN BOUNCED FORWARD HARD ON THE NOSE SECTION. WITNESSES STATED WHEN THE HELICOPTER BECAME AIRBORNE AGAIN IT WAS SPINNING, AND MOVING TOWARDS THEM. THE HELICOPTER STRUCK ELECTRICAL POWER LINES AND CAME TO REST ON AN ASPHALT ROAD ABOUT 90 FEET FROM THE POINT OF INITIAL IMPACT. POSTACCIDENT INVESTIGATION REVEALED NO EVIDENCE OF PREIMPACT MECHANICAL ANOMALY.

Probable Cause and Findings

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

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: HOVER

Findings

1. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Factual Information

HISTORY OF FLIGHT

On July 10, 1993, at 1105 central daylight time, an American Eurocopter AS350BA helicopter, N350BA, operated by the registered owner, American Eurocopter, and piloted by a company employee, crashed while landing at a fairgrounds in West Plains, Missouri. The aircraft was damaged beyond economical repair. There was additional damage to four electrical power lines and two parked automobiles. The commercial pilot and one passenger received serious injuries. Visual meteorological conditions prevailed for the flight, no flight plan was filed. The personal flight operated under 14 CFR Part 91, and originated from the West Plains Airport in Pomona, Missouri, approximately 1050.

The pilot was employed as a helicopter pilot/marketing specialist by the helicopter manufacturer. He was scheduled to perform a helicopter demonstration flight in Des Moines, Iowa on July 12. The pilot and passenger (his wife) incorporated a personal trip into the scheduled mission. Both attended high school in West Plains, Missouri, and their 40th class reunion was scheduled the weekend of July 10. They planned to attend reunion events over the weekend in West Plains before continuing to Des Moines for the demonstration flight. They departed their home base near Dallas, Texas and arrived in the West Plains area on July 9.

The morning of July 10, the pilot and his wife met with other alumni for a reunion breakfast. The pilot offered to fly to the county fairgrounds and take some classmates up for a ride in the helicopter. Many classmates traveled to at the fairgrounds to see the helicopter, and were witness to the accident. The classmates gathered along an asphalt road which bordered the south side of the open field/landing site.

The classmates reported the helicopter approached from the north-northwest and circled them at low altitude (less than 200 feet above the ground) before it began its approach to land on fairground property. They stated everything appeared normal as the helicopter approached to land from the east-northeast. One witness stated "As he came in to land, he leveled out about...6 feet above the ground, but instead of hovering as I expected...dropped like a rock to the ground."

Witnesses stated the helicopter struck the ground hard, tail first, then bounced forward onto the skids, FLIR (forward-looking infra-red) equipment and nose section. They reported the helicopter rebounded to an estimated 50 to 60 feet above the ground, and moved in a southerly direction, towards the crowd. The witnesses reported when the helicopter became airborne again, it was spinning, counterclockwise, and gyrating erratically. They stated it did not seem like the pilot was in control of the helicopter.

Witnesses stated when the helicopter struck the power lines, the lines stretched and broke, springing apart. The "hot" power lines came to rest away from the helicopter wreckage and leaking fuel.

Neither the pilot nor his wife were in condition to be interviewed after the accident. The pilot's wife was interviewed by telephone on March 18, 1994. She indicated she had ridden with her husband in helicopters for thirty-five years. She reported he was "...usually really relaxed in the cockpit, but he was suddenly very busy..." just prior to the accident. She recalled her husband told her to "...hold on, I think we have a hydraulic problem." She did not remember any warning lights or horns. She stated: "It was a clear, bright sunny day, with no winds that I can recall, nothing that could have effected the flying. I've relived that day a thousand times in my mind, I don't remember anything other than Ron's one comment. It's all sort of surreal."

The pilot's wife reported her husband "...doesn't recall even leaving Dallas the day before...doesn't remember anything at all about the accident."

INJURIES TO PERSONS

The pilot received critical injuries and remained in a coma until September, 1993. He transferred to a rehabilitation facility in December, 1993. The pilot's wife reported the doctors estimate a 90% chance of full physical recovery and improved cognitive levels over time.

The pilot's wife, the passenger, received serious injuries during the impact sequence. She advised she is a "Level One" paraplegic since the accident.

OTHER DAMAGE

The helicopter collided with and broke four power lines (LJ2HS wires) during the impact sequence. Bits of flying asphalt/gravel struck and damaged two parked automobiles during the helicopter ground impact.

AIRCRAFT INFORMATION

The helicopters certificate of registration was dated August 19, 1992. It was operated by the registered owner/manufacturer as a police configuration, marketing/demonstration unit. Additional equipment installed for this configuration included a FLIR System, a NiteSun SX-16 (light), sirens, and a public address system. A 400 hour inspection was accomplished on the helicopter on July 8, 1993, at a total time of 392.5 hours. The helicopter total time at the time of the accident was 397.9 hours.

METEOROLOGICAL INFORMATION

Witnesses and the pilot's wife reported the weather at the time of the accident was clear, temperature about 90 degrees Fahrenheit, with unlimited visibility and winds out of the south-

southwest about 5 to 7 knots. Weather information from Flippin, Arkansas, located 45 nautical miles southwest of the accident site, is appended.

WRECKAGE/IMPACT INFORMATION

The helicopter impacted terrain in an open field on Howell County fairgrounds property, located on the northwest side of West Plains, Missouri. Witnesses stated the helicopter impacted the ground tail first, bounced forward, impacting hard on the nose section and FLIR ball, then rebounded into the air, spinning counter-clockwise. The helicopter came to a stop in a 50 degree right bank, 20 degree nose low attitude, on an asphalt road on fairgrounds property. It came to rest on a northerly heading, approximately 90 feet south-southwest of the point of initial impact. Photographs and a wreckage diagram are appended.

On scene investigation revealed no evidence of preimpact mechanical malfunction. The helicopter was transported to American Eurocopter's facility in Grand Prairie, Texas, where a complete functional check of the hydraulic system was performed using an external hydraulic pump. There was no evidence of preimpact hydraulic system anomaly. Flight control continuity was established. An FAA Inspector's statement is appended.

The engine was removed from the airframe, and transported to Turbomeca's facility in Grand Prairie, Texas, where it was installed on a test stand for run-up. The engine ran normally, with all measurements within operating limits. A report of the engine run is appended.

ADDITIONAL INFORMATION

The aircraft wreckage was released to the registered owner upon completion of the on scene investigation, on July 11, 1993.

One witness submitted a videotape of the helicopters approach to landing and the initial impact. Eurocopter France performed a spectral analysis of the videotape footage, which "evidences no abnormal criterion." According to American Eurocopter personnel, RPM indications were commensurate with excessive collective application. A statement and spectral printout are appended.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	57,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	July 21, 1992
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	15000 hours (Total, all aircraft), 2000 hours (Total, this make and model), 14000 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AMERICAN EUROCOPTER	**Registration:**	N350BA
Model/Series:	AS350BA AS350BA	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Provisional (Special)	**Serial Number:**	2527
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	July 8, 1993 100 hour	**Certified Max Gross Wt.:**	4630 lbs
Time Since Last Inspection:	5 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	398 Hrs	**Engine Manufacturer:**	TURBOMECA
ELT:	Installed, not activated	**Engine Model/Series:**	ARRIEL 1B
Registered Owner:	AMERICAN EUROCOPTER CORP.	**Rated Power:**	641 Horsepower
Operator:	AMERICAN EUROCOPTER CORP.	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

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:	Clear	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	32°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	POMONA , MO (UNO)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	10:50 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	Grass/turf
Airport Elevation:		**Runway Surface Condition:**	Dry
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	36.74081,-91.859733(est)

Administrative Information

Investigator In Charge (IIC):	Reeves, Jodi
Additional Participating Persons:	JAMES K SIZER; ST. ANN , MO ADAM A NOVAK; ST. ANN , MO
Original Publish Date:	August 17, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=9173