National Transportation Safety Board
Aviation Accident Final Report

Location:	Peach Springs, AZ	**Accident Number:**	LAX04LA261
Date & Time:	07/12/2004, 1515 MST	**Registration:**	N91MH
Aircraft:	Eurocopter France AS350 B2	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	7 None
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled - Sightseeing		

Analysis

The helicopter settled to the ground hard while in the initial takeoff sequence from a helipad for a sightseeing tour flight. The pilot reported he was departing toward the southwest. During takeoff, about 20 knots of indicated airspeed, he detected the helicopter was not climbing. He noticed the main rotor rpm was decaying; he attempted to increase the rpm by lowering the collective, which was unsuccessful. As the helicopter started to yaw to the left, the pilot unsuccessfully tried to stop the left yaw by applying right pedal. The low rotor speed warning horn activated prior to the helicopter impacting the ground. Two videotapes were recovered from the helicopter's-on-board video recording system and sent to the Safety Board vehicle recorders division for readout. The video recorder group observed the helicopter takeoff in a downwind condition, as the bushes were observed blowing in the same direction as the takeoff path. The engine was installed in a test cell and operated for over 2 hours, and it was found to meet all normal parameters and engine performance specifications.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's selection of downwind takeoff direction and improper use of the collective control prior to reaching translational lift, which resulted in a settling with power condition and a collision with the ground. Also causal was the pilot's failure to maintain main rotor rpm.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) WEATHER CONDITION - TAILWIND
2. (C) WRONG RUNWAY - SELECTED - PILOT IN COMMAND
3. TRANSLATIONAL LIFT - NOT ATTAINED - PILOT IN COMMAND
4. (C) COLLECTIVE - IMPROPER USE OF - PILOT IN COMMAND
5. (C) ROTOR RPM - NOT MAINTAINED - PILOT IN COMMAND
6. SETTLING WITH POWER - ENCOUNTERED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
7. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On July 12, 2004, about 1515 mountain standard time, a Eurocopter AS350 B2, N91MH, settled to the ground hard after experiencing a loss of control while departing Grand Canyon West Airport (1G4), Peach Springs, Arizona. The helicopter was operated by Maverick Helicopters, Inc., which is based in Las Vegas, Nevada. The accident occurred during a sightseeing tour flight conducted under 14 CFR Part 135. The commercial pilot and the six passengers were not injured; the helicopter sustained substantial damage. The cross-country air tour flight departed Peach Springs, at 1514, en route to Las Vegas. Visual meteorological conditions prevailed, and a company flight plan had been filed. The primary wreckage was at 35 degrees 59.25 minutes north latitude and 113 degrees 48.59 minutes west longitude.

During a telephone interview with the National Transportation Safety Board investigator-in-charge (IIC), the pilot reported he was departing from 1G4 to the southwest. During the takeoff, about 20 knots of indicated airspeed, he detected that the helicopter was not climbing. He noticed the main rotor rpm was decaying; he attempted to increase the rpm by lowering the collective, which was unsuccessful. As the helicopter started to yaw to the left, the pilot unsuccessfully tried to stop the left yaw by applying right pedal. He said a warning horn activated prior to the helicopter impacting the ground.

During the impact sequence, the right landing skid was bent and buckled. The tailboom buckled aft of where it attaches to the fuselage.

The accident helicopter was equipped with an on board video camera recording system. The two videotapes were recovered from the operator and sent to the National Transporation Safety Board Vehicle Recorder Division, Washington, D.C., for further analysis.

The helicopter was recovered for further investigation.

The pilot submitted a Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) on August 6, 2004.

METEOROLOGICAL CONDITIONS

The closest official weather observation station was Kingman Airport, Kingman, Arizona (IGM), which was located 45 nautical miles (nm) south of the accident site. The elevation of the weather observation station was 3,449 feet mean sea level (msl). An aviation routine weather report (METAR) for IGM was issued at 1456 Pacific daylight time. It stated: winds from 200 degrees at 7 knots gusting to 20 knots; visibility 10 miles; skies clear; temperature 100 degrees Fahrenheit; dew point 51 degrees Fahrenheit; altimeter 29.94 inHg.

TESTS AND RESEARCH

The Federal Aviation Administration, American Eurocopter, and Turbomeca USA were parties to the investigation.

The engine was removed from the airframe and shipped to the Turbomeca USA factory for further examination.

On September 17, 2004, the engine was installed into a test cell and was run for 2.21 hours with five cycles. The engine met all parameters and engine performance specifications.

Video Recorder Group

A video recorder group convened on August 18, 2004, at the Safety Board laboratory in Washington, D.C. The group was directed to create a partial transcript of the video and audio information, extracting and documenting any facts that may be relevant to the accident investigation. The group reviewed the digitized copy of the recording and produced the attached transcript of the accident flight.

Recording Summary

The recording begins with the external camera view selected, while the helicopter is on the ground in Las Vegas, with the rotor turning. The pilot and passengers are checking the intercom system to make sure they can hear one another. The internal camera view is briefly switched to the internal view, where the passengers can be seen. There are four passengers seated in the rear row, and two passengers in the front seating row, to the pilot's right. All passengers appear to be wearing headsets with boom microphones. About 3 minutes into the recording the helicopter lifts to a hover, the view switches to the external camera, and the helicopter proceeds to taxi to a takeoff location on the airport, and departs.

The 44-minute flight from Las Vegas to Grand Canyon West appears to be routine. The pilot describes different areas, attractions, and information about the Las Vegas and surrounding area, as well as the Hoover Damn, Lake Meade, and the Grand Canyon. The pilot and passengers have conversations continually throughout the flight. Entertainment music can be heard in the background of the intercom system throughout the flight. The weather is bright sun, visibility is unrestricted, the sky is clear to broken cloud layers. The approach and landing at Grand Canyon West was uneventful. The helicopter lands in front of a fuel trailer, and shuts down. After the blades stop turning there is an interruption in the recording, which is consistent with a power off/on cycle (there is no way to determine the length of time that the recording system was off). The attached transcript begins when the recording resumes after this recording/power interruption. This segment of the recording begins with the helicopter in the same position as it was before the power interruption, parked in front of the fuel trailer with the rotors/engine stopped. The view is of the external camera, and remains on that camera until the end of the recording. The pilot and some passengers can be seen in the background of the view, the pilot appears to be pulling a fuel hose back toward the fuel trailer, and the passengers are standing in the distance beyond the fuel trailer.

After the pilot and passengers return to the helicopter and begin preparing for the flight, there is another power interruption in the recording system. After this interruption, the view shows the helicopter in the same parked position, but the engine and rotors are now turning. The helicopter lifts to a hover and begins a sideways taxi to the right, and transitions into a right turn of about 270 degrees as it lines up with a row of helipads for takeoff. During the right hovering turn, a flag located on top of another fuel trailer can briefly be seen. The flag is waving; however, it is too far away to conclusively determine the wind direction. As the helicopter begins its takeoff roll, the passenger in the front right seat makes a comment about the wind. Small shrubbery/vegetation out in front of the helicopter can be seen blowing away from the helicopter along the takeoff roll heading. During the takeoff roll, as the helicopter increases it's groundspeed, the heading remains fairly constant and the altitude does not increase much beyond the hovering altitude, until about 8 seconds after the start of the takeoff roll. At that time, the altitude has increased slightly, and helicopter's heading begins to change to the left. The heading continually changes to the left until the helicopter impacts the ground,

completing at least two full 360-degree turns. The pitch attitude oscillates during the rotation. About 1 second prior to impact a warning horn can be heard.

ADDITIONAL INFORMATION

The IIC released the wreckage to the owner's representative on October 4, 2004.

Pilot Information

Certificate:	Commercial	**Age:**	33, Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	03/01/2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Eurocopter France	**Registration:**	N91MH
Model/Series:	AS350 B2	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	2898
Landing Gear Type:	Skid	**Seats:**	7
Date/Type of Last Inspection:	07/01/2004, 100 Hour	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:	19.6 Hours	**Engines:**	1 Turbo Shaft
Airframe Total Time:	9992.3 Hours	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, not activated	**Engine Model/Series:**	Arriel 1D1
Registered Owner:	MAVERICK HELICOPTER INC	**Rated Power:**	732 hp
Operator:	MAVERICK HELICOPTER INC	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	M7KA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	IGM	**Observation Time:**	1456 MDT
Distance from Accident Site:	45 Nautical Miles	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Temperature/Dew Point:**	38°C
Lowest Ceiling:	None	**Visibility**	10 Miles
Wind Speed/Gusts, Direction:	7 knots/ 20 knots, 200°	**Visibility (RVR):**	
Altimeter Setting:	29.94 inches Hg	**Visibility (RVV):**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Peach Springs, AZ (1G4)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Las Vegas, NV	**Type of Clearance:**	None
Departure Time:	1514 MST	**Type of Airspace:**	

Airport Information

Airport:	GRAND CANYON WEST (1G4)	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	NA	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	6 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	7 None	**Latitude, Longitude:**	35.990278, -113.816389

Administrative Information

Investigator In Charge (IIC):	Patrick H Jones	**Adopted Date:**	02/28/2006
Additional Participating Persons:	Ronald Williams; Federal Aviation Administration; Las Vegas, NV Joseph Syslo; American Eurocopters, LLC; Grand Prarie, TX Frank Varghanten; Turbomeca USA; Grand Prairie, TX Dale Cowley; Maverick Helicopters; Las Vegas, NV		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		

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