Aviation Investigation Final Report

Location:	Las Cruces, New Mexico	**Accident Number:**	DEN04LA149
Date & Time:	September 27, 2004, 23:43 Local	**Registration:**	N497AE
Aircraft:	American Eurocopter AS-350-B3	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The pilot said that prior to the helicopter's liftoff he checked for and had freedom of controls and no warning or caution lights. He said he had no lights on in the cockpit except "very dim instrument and nav-radio lights." The moon was full, overhead, and bright. The pilot elected not to turn on his searchlight and landing and taxi lights for takeoff. The helicopter came up light on the skids and began a vertical ascent. "The nose began to go left, so I applied right pedal - it seemed stuck/blocked. Within 1 to 2 seconds the aircraft began a right roll. I applied left pressure with the cyclic, but it too seemed extremely stiff and/or stuck." The helicopter rolled over on its right side causing substantial damage. The weather conditions at the time of the accident were reported as clear skies, 10 miles visibility, and winds of 170 degrees at 4 knots. An examination of the helicopter's flight controls and other systems revealed no anomalies. The helipad was located in a former gravel pit with pale white-colored sandy soil surrounding and rising above the pad in all quadrants. Ground scars and paint transfers observed were consistent with the ground resonance spring on the right skid coming in contact with the pad. The ground scars' pattern indicated the helicopter was moving laterally and aft when the spring made first contact with the pad, subsequently initiating a dynamic rollover of the aircraft.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain aircraft control during takeoff resulting in the helicopter's skid striking the helipad and the helicopter's subsequent rollover. Factors contributing to the accident were the pilot's improper preflight planning/decision, his failure to use the helicopter's

landing/taxi lights and searchlight, the bright night, and the pilots diminished ability to see visual references.

Findings

Occurrence #1: ROLL OVER
Phase of Operation: HOVER - IN GROUND EFFECT

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
2. (F) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
3. (F) EXTERIOR/NAV LIGHT(S) - NOT USED - PILOT IN COMMAND
4. (F) LANDING LIGHTS - NOT USED - PILOT IN COMMAND
5. (F) LIGHT CONDITION - BRIGHT NIGHT
6. (F) VISUAL LOOKOUT - DIMINISHED - PILOT IN COMMAND
7. DYNAMIC ROLLOVER - ENCOUNTERED

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: HOVER - IN GROUND EFFECT

Findings
8. TERRAIN CONDITION - GROUND

Factual Information

On September 27, 2004, at 2343 mountain daylight time, an American Eurocopter AS-350 B3 helicopter, N497AE, operated by Southwest Air Ambulance, was substantially damaged when while hovering after lift off from the Las Cruces Memorial Hospital helipad (73E), Las Cruces, New Mexico, the helicopter's skid struck the helipad and the helicopter subsequently rolled over on its side. Night visual meteorological conditions prevailed at the time of the accident. The positioning flight was being operated under the provisions of Title 14 CFR Part 91 without a flight plan. The airline transport pilot sustained minor injuries. The flight was originating at the time of the accident and was en route to the Las Cruces International Airport.

The pilot initially reported that just after lift off from the helipad, he experienced a loss of tail rotor capability. He reported the helicopter spun and impacted the ground coming to rest on its right side.

In his written statement, the pilot said that prior to liftoff he checked for and had freedom of controls and no warning or caution lights. He said he had no lights on in the cockpit except "very dim instrument and nav-radio lights." The pilot said the moon was full, overhead, and bright, so he elected not to turn on his searchlight and landing and taxi lights for takeoff. The pilot said the helicopter came up light on the skids. He then began a vertical ascent. "The nose began to go left, so I applied right pedal - it seemed stuck/blocked. Within 1 to 2 seconds the aircraft began a right roll. I applied left pressure with the cyclic, but it too seemed extremely stiff and/or stuck." The pilot said he was aware the helicopter was rolling over. He said he felt and heard the main rotor blades hit the ground.

The weather conditions at the time of the accident were reported as clear skies, 10 miles visibility, and winds of 170 degrees at 4 knots.

The helicopter was examined at the accident scene. The helicopter was resting on its right side approximately 25 feet west of the helipad center. An examination of the helicopter showed substantial damage to the main rotor blades, tail rotor, tail boom, right side of the cabin, and the right skid. An examination of the helicopter's flight controls showed no anomalies. An examination of the helicopters remaining systems revealed no anomalies.

The helipad was located in a former gravel pit with pale white-colored sandy soil surrounding and rising above the pad in all quadrants. Ground scars and paint transfers observed were consistent with the ground resonance spring on the right skid coming in contact with the pad. The ground scars' pattern indicated the helicopter was moving laterally and aft when the spring made first contact with the pad, subsequently initiating a dynamic rollover of the aircraft.

Pilot Information

Certificate:	Airline transport; 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; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 19, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 31, 2004
Flight Time:	10239 hours (Total, all aircraft), 124 hours (Total, this make and model), 8478 hours (Pilot In Command, all aircraft), 47 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	American Eurocopter	**Registration:**	N497AE
Model/Series:	AS-350-B3	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	3686
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	August 26, 2004 100 hour	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:	39.5 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	188.8 Hrs at time of accident	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, not activated	**Engine Model/Series:**	Arriel 2B
Registered Owner:	Enchantment Aviation	**Rated Power:**	727 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	Southwest Medevac	**Operator Designator Code:**	NE6A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/bright
Observation Facility, Elevation:	LRU,4456 ft msl	**Distance from Accident Site:**	
Observation Time:	11:54 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	17°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Las Cruces, NM (73E)	**Type of Flight Plan Filed:**	None
Destination:	Las Cruces , NM (LRU)	**Type of Clearance:**	None
Departure Time:	23:43 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Las Cruces Memorial Hospital 73E	**Runway Surface Type:**	Asphalt
Airport Elevation:	4000 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	32.286945,-106.919723

Administrative Information

Investigator In Charge (IIC):	Bowling, David
Additional Participating Persons:	Tamara Bell; Federal Aviation Administration; Albuquerque, NM Brian J Iorg; Federal Aviation Administration; Albuquerque, NM Joseph A Syslo; American Eurocopter; Grand Prairie, TX
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Investigation Class:	Class
Note:	
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