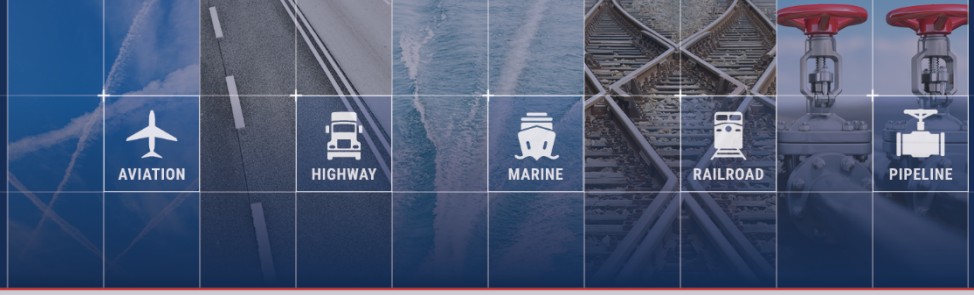

Aviation Investigation Final Report

Location:	JETMORE, Kansas	**Accident Number:**	CHI99LA257
Date & Time:	July 27, 1999, 17:30 Local	**Registration:**	N88007
Aircraft:	Schweizer 269C	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot said he was going to practice an auto rotation. He said he '...rolled the throttle back to idle position and dropped the collective...[and]noted a red light on the dash and could hear the engine had quit running.' He said the subsequent auto rotation '...terminated in a hard landing.' The on-scene investigation revealed flight and powerplant control operational continuity and fuel in the accident helicopter's fuel tanks. The engine was test run and its low idle was 1,300 rpm. According to a representative from a company that maintains and rebuilds helicopters like that of the accident helicopter, '...it is possible for an engine to die when a rapid roll-off of [the] throttle is accomplished and too low an idle RPM setting exists.' The FAA Approved Flight Manual said that the pilot should 'Split the needles by lowering the collective while maintaining throttle setting. The throttle correlation will establish a high idle RPM (approximately 2500 RPM) and will prevent the engine from loading up or stalling on recovery.'

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's use of improper procedures by not following the helicopter manufacturer's recommended engine RPM reduction procedures during autorotations. A factor was the pilot not attaining the proper rotor RPM during the autorotation practice.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: DESCENT

Findings
1. AUTOROTATION - INTENTIONAL - PILOT IN COMMAND
2. (C) PROCEDURES/DIRECTIVES - IMPROPER - PILOT IN COMMAND
3. (F) ROTOR RPM - NOT ATTAINED - PILOT IN COMMAND
4. REMEDIAL ACTION - ATTEMPTED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

On July 27, 1999, at 1730 central daylight time (cdt), a Schweizer 269C, N88007, piloted by a private pilot, was substantially damaged when it collided with the ground during a pilot described practice auto rotation. Visual meteorological conditions prevailed at the time of the accident. The 14 CFR Part 91 personal flight was not operating on a flight plan. The pilot reported no injuries. The flight departed Hayes, Kansas, at 1645 cdt.

The pilot said he "...climbed [the helicopter] to between 3500 and 3600 feet, turned the helicopter straight west into the wind and rolled the throttle back to idle position and dropped the collective. Immediately upon doing so, I noted a red light on the dash and could hear the engine had quit running. When I looked at the engine RPMs, I could see it was at zero." The pilot said the auto rotation "...terminated in a hard landing."

According to the Federal Aviation Administration Principal Maintenance Inspector (PMI) who spoke with the pilot, N88007's pilot told him that he performs auto rotations with engine operating at 2,000 rpm. The PMI said the pilot stated the engine stopped running at the 2,000 rpm indication. The PMI reported continuity and operation to the factory limits was established for the flight and powerplant controls. The engine was started and its lowest idle rpm was 1,300. The magnetos check revealed the rpm drop was within the manufacturer's specifications.

The PMI said a blue colored liquid, similar to 100LL AVGAS was found in N88007's fuel tanks. The pilot said he departed Hayes, Kansas, with full fuel, 49 gallons, and had flown about 30 minutes before the engine stopped running. The pilot said he had filled N88007's fuel tanks at Hayes, Kansas.

A representative from a company who maintains and rebuilds helicopters and has experience with the accident helicopter's type said, "...it is possible for an engine to die when a rapid roll off of [the] throttle is accomplished and too low an idle RPM setting exists." According to the FAA Approved Flight Manual (AFM), the section entitled, "Practice Autorotations," the pilot is to "Split the needles by lowering the collective while maintaining throttle setting. The throttle correlation will establish a high idle RPM (approximately 2500 RPM) and will prevent the engine from loading up or stalling on recovery." An excerpt from the AFM addressing this procedure is appended to this report.

Pilot Information

Certificate:	Private	**Age:**	44,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	November 16, 1998
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	850 hours (Total, all aircraft), 645 hours (Total, this make and model), 445 hours (Pilot In Command, all aircraft), 65 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Schweizer	**Registration:**	N88007
Model/Series:	269C 269C	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	S1546
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	July 7, 1999 AAIP	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	8 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	907 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	H10-360-D1A
Registered Owner:	SILVER HAWK SECURITY, INC.	**Rated Power:**	190 Horsepower
Operator:		**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:	DCC ,2594 ft msl	**Distance from Accident Site:**	25 Nautical Miles
Observation Time:	17:56 Local	**Direction from Accident Site:**	190°
Lowest Cloud Condition:	Scattered / 8000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	36°C / 17°C
Precipitation and Obscuration:			
Departure Point:	HAYES , KS (HYS)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	16:45 Local	**Type of Airspace:**	Class G

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 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	38.080951,-99.889755(est)

Administrative Information

Investigator In Charge (IIC):	Gattolin, Frank
Additional Participating Persons:	JAMES D BADHORSE; WICHITA , KS
Original Publish Date:	January 18, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46900