Aviation Investigation Final Report

Location:	Eldridge, Iowa	**Accident Number:**	CHI01LA178
Date & Time:	June 18, 2001, 20:15 Local	**Registration:**	N612B
Aircraft:	Enstrom F-28A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The helicopter pilot said, "...(5) Preflighted, got in, shut doors, seat belts on, headset on, started, warmed up then picked up to a 3 [foot] hover. Everything was in the green and looked normal. I then rotated 180 [degrees] to transition out, stopped, everything looked normal. (6) I then added full power, lower cyclic and slightly raised collective to start moving [forward]. As we climbed to about 15-17 [feet], we heard a coughing sound, then silent. Engine quit, I tried to get it back on the ground as flat and level as possible. You can not auto[rotate] at 17 [feet]." A Federal Aviation Administration publication states, "A height/velocity (H/V) diagram, published by the manufacturer for each model of helicopter, depicts the critical combinations of airspeed and altitude should an engine failure occur. Operating at the altitudes and airspeeds shown within the crosshatched or shaded areas of the H/V diagram may not allow enough time for the critical transition from powered flight to autorotation." The helicopter flight manual states, "... The effects of wind on take-off and landings are important factors and should be considered in the operation of the helicopter; however, in planning critical helicopter operations, the effects of winds can be relied upon to assist in accomplishing landings and take-offs from unobstructed areas. If the helicopter were riding a gust of wind on the final approach and the gust should decrease as the helicopter was approaching a hover, the helicopter would probably rapidly 'settle' if the wind factor was planned on to execute the landing. This condition would also hold true during the initial phase of take-off. ... Another effect of wind that must be considered is the 'lee' effect of the wind over hills, ridges, and obstacles. The downdrafts resulting from these conditions particularly affect the initial phase of take-off or the final phase of landing." A postaccident examination of the helicopter and accident site was conducted. The helicopter was found facing in a northerly direction in an open, flat, unobstructed field. There were buildings to the south of the field. No anomalies were found with respect to the helicopter. The winds were reported to be from 200 degrees at 17 knots gusting to 22 knots with a peak wind of 210 degrees at 26 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadequate autorotation and disregarded wind information by the pilot. Factors were the gusting tailwind and the loss of engine power for undetermined reasons.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (F) REASON FOR OCCURRENCE UNDETERMINED
2. (F) WEATHER CONDITION - GUSTS
3. (F) WEATHER CONDITION - TAILWIND
4. (C) WIND INFORMATION - DISREGARDED - PILOT IN COMMAND

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

Findings
5. (C) AUTOROTATION - INADEQUATE - PILOT IN COMMAND

Factual Information

On June 18, 2001, at 2015 central daylight time, an Enstrom F-28A, N612B, piloted by a private pilot, was substantially damaged when it impacted the terrain during takeoff. The flight was conducted under the provisions of 14 CFR Part 91 and was not on a flight plan. Visual meteorological conditions prevailed at the time of the accident. The pilot received serious injuries and the passenger received minor injuries. The flight was originating at the time of the accident and the destination was the Davenport Municipal Airport, Davenport, Iowa.

In his written report, the pilot said, "...(5) Preflighted, got in, shut doors, sett belts on, headset on, started, warmed up then picked up to a 3 [foot] hover. Everything was in the green and looked normal. I then rotated 180 [degrees] to transition out, stopped, everything looked normal. (6) I then added full power, lower cyclic and slightly raised collective to start moving [forward]. As we climbed to about 15-17 [feet], we heard a coughing sound, then silent. Engine quit, I tried to get it back on the ground as flat and level as possible. You can not auto[rotate] at 17 [feet]."

Federal Aviation Administration publication FAA-H-8083-21 - ROTORCRAFT FLYING HANDBOOK states, "A height/velocity (H/V) diagram, published by the manufacturer for each model of helicopter, depicts the critical combinations of airspeed and altitude should an engine failure occur. Operating at the altitudes and airspeeds shown within the crosshatched or shaded areas of the H/V diagram may not allow enough time for the critical transition from powered flight to autorotation." A copy of the Enstrom F-28A height/velocity diagram is appended to this report.

The helicopter flight manual states in section 8, "... The effects of wind on take-off and landings are important factors and should be considered in the operation of the helicopter; however, in planning critical helicopter operations, the effects of winds can be relied upon to assist in accomplishing landings and take-offs from unobstructed areas. If the helicopter were riding a gust of wind on the final approach and the gust should decrease as the helicopter was approaching a hover, the helicopter would probably rapidly 'settle' if the wind factor was planned on to execute the landing. This condition would also hold true during the initial phase of take-off. ... Another effect of wind that must be considered is the 'lee' effect of the wind over hills, ridges, and obstacles. The downdrafts resulting from these conditions particularly affect the initial phase of take-off or the final phase of landing."

A postaccident examination of the helicopter and accident site was conducted. The helicopter was found facing in a northerly direction in an flat, open, unobstructed field. The field was estimated to be about 15 acres in size. There were buildings to the south of the field. The helicopter control system was examined and no anomalies that could be associated with a preexisting condition were found. The engine was examined and no anomalies were found.

Photographs of the accident scene are appended to this report.

The weather at the Davenport Municipal Airport, Davenport, Iowa, was reported as: Observation time 0054 UTC; Winds 200 degrees at 17 knots gusting to 22 knots; Visibility 10 miles; Sky condition clear; Temperature 29 degrees Celsius; Dewpoint 16 degrees Celsius; Altimeter setting 29.89 inches of mercury. The report also contained a remark that the peak winds recorded were 210 degrees at 26 knots at 0038 UTC.

Pilot Information

Certificate:	Commercial; Private	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	September 28, 2000
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	October 1, 2000
Flight Time:	2575 hours (Total, all aircraft), 86 hours (Total, this make and model), 2165 hours (Pilot In Command, all aircraft), 66 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Enstrom	**Registration:**	N612B
Model/Series:	F-28A	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	313
Landing Gear Type:	Skid	**Seats:**	3
Date/Type of Last Inspection:	Annual	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	HIO-360-C1A
Registered Owner:	Walton Aviation, Inc.	**Rated Power:**	205 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DVN,753 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	19:54 Local	**Direction from Accident Site:**	355°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	17 knots / 22 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	29°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Eldridge, IA	**Type of Flight Plan Filed:**	None
Destination:	Davenport, IA (DVN)	**Type of Clearance:**	None
Departure Time:	20:15 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	41.629661,-90.57077(est)

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	Thomas L Clifton; FAA-Des Moines, Iowa-FSDO; Des Moines, IA
Original Publish Date:	May 21, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=53261