Aviation Investigation Final Report

Location:	KILLEEN, Texas	**Accident Number:**	FTW96LA149
Date & Time:	March 16, 1996, 11:05 Local	**Registration:**	N9574
Aircraft:	Enstrom F-28A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that during his preflight of the helicopter, he knew that the fuel tanks were not full, but they 'seemed adequate.' He estimated that the two 15 gallon tanks were about '3/4 of a tank capacity.' The helicopter was last flown the night before by another pilot. That pilot estimated that the fuel tanks were only '1/4 full' at the end of that flight. The Pilot/Owners Handbook revealed a fuel consumption of about 19.1 gallons per hour at 100% power and 12.2 gallons per hour at 75% power. The accident pilot reported that 'a normal start, warm-up and rotor engagement' were made before a 'hovering demonstration and short flight' were accomplished. He then boarded two passengers, lifted off, and performed another hovering demonstration. The pilot then flew west for about 3 miles, and the engine began to 'run rough.' Subsequently, the engine 'quit completely,' and the pilot autorotated to rough and uneven ground, where the helicopter touched down hard. Postcrash examination revealed no evidence of fuel in the fuel tanks.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper planning/decision, which resulted in fuel exhaustion and a loss of engine power, due to an inadequate supply of fuel. A factor relating to the accident was: lack of suitable terrain for an emergency landing (autorotation).

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: MANEUVERING

Findings
1. (C) PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. (C) FLUID,FUEL - EXHAUSTION
3. (C) FUEL SUPPLY - INADEQUATE - PILOT IN COMMAND

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
4. AUTOROTATION - PERFORMED - PILOT IN COMMAND

Occurrence #3: HARD LANDING
Phase of Operation: EMERGENCY LANDING

Findings
5. (F) TERRAIN CONDITION - NONE SUITABLE
6. TERRAIN CONDITION - ROUGH/UNEVEN

Factual Information

On March 16, 1996, at 1105 central standard time, an Enstrom F-28A, N9574, registered to and operated by a private owner under Title 14 CFR Part 91, was substantially damaged during a forced landing near Killeen, Texas. The commercial helicopter pilot and one passenger were not injured; however, one passenger sustained minor injuries. Visual meteorological conditions prevailed for the local flight that originated at Killeen Municipal Airport near Killeen, Texas, approximately 26 minutes before the accident. No flight plan was filed.

The pilot reported in the Pilot/Operator Aircraft Accident Report that during his preflight of the helicopter he knew that the fuel tanks were not full, but they "seemed adequate." He estimated that the two 15 gallon tanks were about "3/4 of a tank capacity." The pilot reports that he performed the "walkaround" of the helicopter while "talking about several items to individuals present." The pilot further reports that "a normal start, warm-up and rotor engagement" were made before a "hovering demonstration and short flight to the west along highway 190 and return to Killeen airport."

The helicopter was last flown the night before, by another pilot. He reported to a FAA inspector that he thought the fuel tanks were only "1/4 full" at the termination of that flight.

The Pilot's Owners Handbook for the Enstrom F-28A revealed a fuel consumption of approximately 19.1 gallons per hour at 100%. Fuel consumption at 75% power, is approximately 12.3 gallons per hour.

The pilot states that after he returned to Killeen Airport, two passengers were boarded and he began a second flight identical to the first. He performed a hovering demonstration, and, then flew west along highway 190. Approximately 3 miles later, the engine began to "run rough." Subsequently the engine "quit completely" and the pilot autorotated to the rough and uneven ground. The ensuing hard landing damaged the main rotor blade, tailboom, tail rotor gearbox, tail rotor, tail skid, and left rear diagonal skidtube.

Post-crash examination of the aircraft by a FAA inspector revealed no evidence of fuel in the fuel tanks.

Pilot Information

Certificate:	Commercial; Private	**Age:**	50,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 26, 1995
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	4000 hours (Total, all aircraft), 23 hours (Total, this make and model), 2300 hours (Pilot In Command, all aircraft), 9 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Enstrom	**Registration:**	N9574
Model/Series:	F-28A F-28A	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	132
Landing Gear Type:	Skid	**Seats:**	3
Date/Type of Last Inspection:	January 4, 1996 100 hour	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	116 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1338 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	HIO-360-C1A
Registered Owner:	TERRY L. HIGGINS	**Rated Power:**	205 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:	ILE ,846 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	10:54 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	23°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(ILE)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	00:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor, 1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	Unknown
Total Injuries:	1 Minor, 2 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Struhsaker, James
Additional Participating Persons:	JAMES A HAYS; SAN ANTONIO , TX
Original Publish Date:	October 4, 1996
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=19785

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