Aviation Investigation Final Report

Location:	Sodus, New York	**Accident Number:**	GAA16CA163
Date & Time:	March 26, 2016, 10:30 Local	**Registration:**	N5698Y
Aircraft:	Enstrom F280	**Aircraft Damage:**	Substantial
Defining Event:	Abnormal runway contact	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor reported that he asked the pilot receiving instruction to demonstrate a run-on landing on the sod between the runway and taxiway. He reported that as the helicopter touched down at about 25 miles per hour (21.72 knots), the pilot lowered the collective to the full down position while the helicopter was still moving forward with considerable momentum. The helicopter began to "lurch forward" and the nose of the helicopter started to lower. The flight instructor then came on the flight controls, but the helicopter had progressed to an "extreme nose low attitude," and he applied aft cyclic to prevent the main rotor blades from impacting terrain. The main rotor blades instead impacted and separated the tailboom. The fuselage continued moving forward and the nose impacted terrain and then settled back on the skids. The helicopter sustained substantial damage to the fuselage, main rotor system, tailboom, and tail rotor system.

The flight instructor verified that there were no preimpact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation.

The flight instructor reported that he recommended landing on sod due to potential wear on the bottom of the skids from friction with the paved runway. He also reported that the pilot had successfully performed run-on landings in the past on the sod area.

As a safety recommendation, the flight instructor reported that landing the helicopter on the runway instead of the sod may have lessened the effects of improper application of the collective at touchdown. He reported that he should have verbally reviewed the importance of using the collective to control the friction with the landing surface while in the traffic pattern to ensure the pilot's intentions were mutually understood. He further reported that he should have maintained a guarded position on the flight controls regardless of the pilot's abilities to decrease the flight instructor's reaction time for maneuver recovery.

Enstrom Helicopter Corporation has published the Enstrom 280F Training Maneuvers Manual (2014). This manual discusses objectives and descriptions for a shallow approach and run-on landing, and states in part:

Caution, Enstrom does not endorse practicing run-on landings. Run-on landings should only be accomplished on a smooth, hard surface; and should always be planned to the center of the runway to preclude sliding off the runway, and overturning.

After ground contact, maintain heading with pedals and maintain collective position. Ensure that power is maintained until the helicopter comes to a complete stop to insure directional control.

The Federal Aviation Administration has published the Helicopter Instructor's Handbook FAA-H-8083-4 (2012). This handbook provides instructional information for a shallow approach and run-on landing and states in part:

In any case, do not rapidly lower the collective after touchdown. Smooth reduction of collective prevents a rapid stop that could result in damage to the aircraft or injury to the crew.

For helicopters equipped with skids, it may be better to practice running landings on a hard surface runway instead of on a grassy field because there is less probability of catching a skid, which can lead to dynamic rollover. In addition, check the condition of the skid shoes before and after practicing running takeoffs and landings.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper collective application at touchdown during a practice run-on landing, which resulted in the main rotor system impacting the tailboom and the forward portion of the fuselage impacting terrain during remedial action by the flight instructor. Contributing to the accident was the flight instructor's delayed remedial action.

Findings

Personnel issues	Aircraft control - Student/instructed pilot
Aircraft	Main rotor control - Incorrect use/operation
Aircraft	Pitch control - Incorrect use/operation
Personnel issues	Delayed action - Instructor/check pilot

Factual Information

History of Flight

Landing	Simulated/training event
Landing-flare/touchdown	Abnormal runway contact (Defining event)
Landing-landing roll	Loss of control on ground
Landing-landing roll	Dynamic rollover
Landing-landing roll	Attempted remediation/recovery
Landing-landing roll	Part(s) separation from AC
Landing-landing roll	Collision during takeoff/land

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	52,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Helicopter; Instrument helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 22, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 15, 2015
Flight Time:	(Estimated) 3847 hours (Total, all aircraft), 151 hours (Total, this make and model), 3657 hours (Pilot In Command, all aircraft), 44 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 18 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	56,Female
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 4, 2014
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 19, 2015
Flight Time:	(Estimated) 1698 hours (Total, all aircraft), 9 hours (Total, this make and model), 1593 hours (Pilot In Command, all aircraft), 7 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Enstrom	**Registration:**	N5698Y
Model/Series:	F280 F	**Aircraft Category:**	Helicopter
Year of Manufacture:	1981	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1212
Landing Gear Type:	N/A; Skid	**Seats:**	2
Date/Type of Last Inspection:	October 27, 2015 100 hour	**Certified Max Gross Wt.:**	2600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2070 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	HIO-360-F1AD
Registered Owner:	B.A.C. Services	**Rated Power:**	225 Horsepower
Operator:	B.A.C. Services	**Operating Certificate(s) Held:**	Commuter air carrier (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KROC,555 ft msl	**Distance from Accident Site:**	25 Nautical Miles
Observation Time:	13:54 Local	**Direction from Accident Site:**	254°
Lowest Cloud Condition:	Scattered / 2100 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	110°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.34 inches Hg	**Temperature/Dew Point:**	1°C / -4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sodus, NY (SDC)	**Type of Flight Plan Filed:**	None
Destination:	Sodus, NY (SDC)	**Type of Clearance:**	None
Departure Time:	10:25 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	WILLIAMSON-SODUS SDC	**Runway Surface Type:**	Grass/turf
Airport Elevation:	424 ft msl	**Runway Surface Condition:**	Soft;Wet
Runway Used:	10	**IFR Approach:**	None
Runway Length/Width:	3801 ft / 60 ft	**VFR Approach/Landing:**	Simulated forced landing;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	43.234722,-77.124725(est)

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Thomas G McCormick ; FAA Rochester FSDO; Rochester, NY
Original Publish Date:	May 3, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92905