Aviation Investigation Final Report

Location:	Eden Prairie, Minnesota	**Accident Number:**	CHI05CA005
Date & Time:	October 9, 2004, 08:22 Local	**Registration:**	N82DR
Aircraft:	Buss Rotorway Exec	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The experimental amateur-built helicopter sustained substantial damage on impact with terrain during an autorotation following an in-flight loss of engine power while on its base leg. The pilot stated in his accident report, "I was given clearance for the option and on the base leg I reached for, and pulled, the carburetor heat lever. After releasing the lever, I inadvertently bumped and threw the main battery switch. I felt the switch move. (These switches are located on the top of the center console, and they are hidden from view by the pilot's right leg due to cramped quarters). I then tried to find and reengage the switch and I threw the avionics switch. I immediately re-engaged the avionics switch. While searching for the battery switch, the engine stopped. ... Due to forward groundspeed, the helicopter slid forward and tipped forward. The rotor blades struck the ground in the front of the ship, which created torque forces, which tipped the machine onto its left side. " The pilot reported that there were no mechanical malfunctions in reference to the helicopter on the flight. The pilot's safety recommendation was that the "battery switch should be relocated or [guarded]."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadvertent deactivation of the battery switch leading to the helicopter's loss of engine power on base leg. A factor was the crops he encountered during the emergency landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH - VFR PATTERN - BASE LEG/BASE TO FINAL

Findings
1. ELECTRICAL SYSTEM,ELECTRIC SWITCH - OTHER
2. (C) MISCELLANEOUS - INADVERTENT DEACTIVATION - PILOT IN COMMAND

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

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings
3. (F) TERRAIN CONDITION - CROP
4. TERRAIN CONDITION - GROUND

Factual Information

On October 9, 2004, about 0822 central daylight time, an experimental amateur-built Buss Rotorway Exec helicopter, N82DR, operated by a commercial pilot, sustained substantial damage on impact with terrain during an autorotation following an in-flight loss of engine power while on its base leg to runway 28L at Flying Cloud Airport (FCM), near Eden Prairie, Minnesota. The personal flight was operating under 14 CFR Part 91. Visual meteorological conditions prevailed at the time of the accident. No flight plan was on file. The pilot reported no injuries. The local flight originated from FCM.

The pilot stated in his accident report:

> I launched at 08:15 from General Aviation Services at Flying Cloud Airport, Eden Prairie, MN. I was given clearance to runway 28L. Upon take off clearance I commenced flying left pattern. I was given clearance for the option and on the base leg I reached for, and pulled, the carburetor heat lever. After releasing the lever, I inadvertently bumped and threw the main battery switch. I felt the switch move. (These switches are located on the top of the center console, and they are hidden from view by the pilot's right leg due to cramped quarters). I then tried to find and reengage the switch and I threw the avionics switch. I immediately re-engaged the avionics switch. While searching for the battery switch, the engine stopped. (The switch had shut off the fuel pumps, enabling the engine to continue running for a few seconds) I immediately lowered the collective and went into auto-rotation. I picked my spot to land and auto-rotated to that spot, and then initiated my cyclic flare. Just before touchdown I leveled the machine and pulled in all of the collective. I landed level, fairly softly, but with forward ground speed, in a soybean field diagonal to the rows. Calm winds were not a factor. Due to forward groundspeed, the helicopter slid forward and tipped forward. The rotor blades struck the ground in the front of the ship, which created torque forces, which tipped the machine onto its left side. The tower contacted me and confirmed that I was uninjured. I unbuckled my harness, shut off the fuel and all switches. I climbed out the

passenger door.

The pilot reported that there were no mechanical malfunctions in reference to the helicopter on the flight.

The pilot's safety recommendation was that the "battery switch should be relocated or [guarded]."

Pilot Information

Certificate:	Commercial	**Age:**	57,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	July 8, 2004
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	January 16, 2004
Flight Time:	228 hours (Total, all aircraft), 52 hours (Total, this make and model), 153 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Buss	**Registration:**	N82DR
Model/Series:	Rotorway Exec	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	1
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	Annual	**Certified Max Gross Wt.:**	1320 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	328 Hrs at time of accident	**Engine Manufacturer:**	Rotorway
ELT:	Not installed	**Engine Model/Series:**	RW152
Registered Owner:	Richard S. Buss	**Rated Power:**	145 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:	FCM,906 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	100°
Lowest Cloud Condition:	Few / 20000 ft AGL	**Visibility**	9 miles
Lowest Ceiling:	Broken / 25000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	0 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	7°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Eden Prairie, MN (FCM)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	08:22 Local	**Type of Airspace:**	Class D

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:**	44.82722,-93.457221

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	Rick Sherman; Minneapolis, MN, FSDO
Original Publish Date:	December 3, 2004
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=60311