Aviation Investigation Final Report

Location:	Hood River, Oregon	**Accident Number:**	SEA04CA107
Date & Time:	June 16, 2004, 11:30 Local	**Registration:**	N717CS
Aircraft:	Steward Rocky 162F	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During cruise at 2,200 feet mean sea level, the helicopter lost engine power, necessitating the pilot to make an autorotation. Having departed earlier in the morning with full fuel and making two previous flights, the pilot felt he had sufficient fuel for a third flight. On the return leg of the third flight the pilot noticed the engine LOW RPM light illuminate, a low RPM needle indication, a high manifold pressure gage indication, but no LOW FUEL warning light. Assuming he had lost engine power, the pilot made an autorotation to an open hay field. During the landing sequence into the high vegetation, the aircraft initially went up on its nose before rolling over on its left side. A post accident examination revealed no fuel was present when the right tank was dipped, and that 4 to 6 ounces of fuel was present when the helicopter's common drain was opened. The pilot indicated that during the course of the day he was using higher takeoff power settings due to the warmer weather, and that his miscalculations had caused him to run out of fuel.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's miscalculation of fuel consumption and his inadequate in-flight planning/decision,

which resulted in fuel exhaustion and loss of engine power. A factor was the high vegetation.

Findings

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

Findings
1. (C) FLUID,FUEL - EXHAUSTION
2. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
3. (C) REFUELING - NOT PERFORMED - PILOT IN COMMAND
4. (C) FUEL CONSUMPTION CALCULATIONS - INADEQUATE - PILOT IN COMMAND

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

Findings
5. AUTOROTATION - PERFORMED - PILOT IN COMMAND

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

Findings
6. (F) TERRAIN CONDITION - HIGH VEGETATION

Factual Information

On June 16, 2004, about 1130 Pacific daylight time, a Stewart Rocky 162F helicopter, N717CS, lost engine power and was substantially damaged during a forced landing near Hood River, Oregon. The helicopter is owned by the pilot and was being operated as a visual flight rules (VFR) flight under the provisions of Title 14, CFR Part 91, when the accident occurred. The airline transport pilot, the sole occupant of the helicopter, was not injured. Visual meteorological conditions prevailed and a flight plan was not filed for the flight that originated from the Ken Jernstedt Airfield (4S2), Hood River, Oregon, at 0945.

In a written statement dated June 16, 2004, the pilot reported that while flying at 2,200 feet mean sea level he noticed a low RPM needle and warning light, a high manifold gage indication, but no LOW FUEL warning light, which would indicate approximately 3 gallons of fuel remaining. The pilot further reported that he tried adding throttle and reducing collective, but when this did not correct the problem he assumed he had lost engine power. The pilot stated that he then made an immediate 180 degree turn and performed an autorotation to a large hay field, "...which was about 4 feet high and thick." The pilot further stated that the landing went well until the helicopter slowly rotated towards the nose and the main rotor blade made ground contact. The helicopter subsequently rolled over on its left side. The pilot related that during a post accident examination he dipped the right tank and found no fuel present. At the request of the NTSB investigator-in-charge the pilot also drained what fuel remained from a common drain into a jar which measured approximately 3 inches in diameter. The total amount of fuel drained into the jar measured about 1 inch, equating to approximately 4 to 6 ounces according to the pilot. The pilot reported that during the day it was taking higher power settings to lift off and hover due to the warmer weather. The pilot further reported, "I just miscalculated my fuel. I think I ran out of fuel."

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	58,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	
Other Aircraft Rating(s):	Glider; Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2	**Last FAA Medical Exam:**	June 2, 2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	6527 hours (Total, all aircraft), 188 hours (Total, this make and model), 77 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Steward Rocky	**Registration:**	N717CS
Model/Series:	162F	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	CS001
Landing Gear Type:	Skid	**Seats:**	
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Rotorway
ELT:		**Engine Model/Series:**	162F
Registered Owner:	Arthur G. Sandercock	**Rated Power:**	
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Hood River, OR (4S2)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	
Total Injuries:	1 None	**Latitude, Longitude:**	45.64389,-121.584442

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	
Original Publish Date:	September 29, 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=59454