



Aviation Investigation Final Report

Location:	Lakeville, Minnesota	Accident Number:	CEN11LA370
Date & Time:	May 25, 2011, 11:40 Local	Registration:	N96SH
Aircraft:	Bell 47G-3B-1	Aircraft Damage:	Substantial
Defining Event:	Powerplant sys/comp malf/fail	Injuries:	1 Serious
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The pilot stated that the helicopter experienced a total loss of engine power while maneuvering during an aerial application operation. He performed a forced landing to a swamp, which resulted in substantial damage to the airframe. Examination of the engine revealed that the compressor discharge pressure bleed line between the governor and the fuel control was leaking at a loose B-nut.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to a loose B-nut on the compressor discharge pressure bleed line.

Findings

Aircraft	(general) - Not specified
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Factual Information

History of Flight

Maneuvering-low-alt flying	Powerplant sys/comp malf/fail (Defining event)
Maneuvering-low-alt flying	Loss of engine power (total)
Autorotation	Loss of engine power (total)
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

On May 25, 2011, about 1140 central daylight time, a Bell 47G-3B-1, N96SH, experienced a total loss of engine power while maneuvering near Lakeville, Minnesota. The pilot subsequently made a forced landing on a swamp near Lakeville, Minnesota. The certificated commercial pilot sustained serious injuries. The helicopter sustained substantial damage to the fuselage and tailboom when it impacted terrain during the forced landing. The helicopter was registered to and operated by Scotts Helicopter Services Inc under the provisions of 14 Code of Federal Regulations Part 137 as an aerial application flight. Visual meteorological conditions prevailed and no flight plan had been filed for the flight that originated from Flying Cloud Airport (FCM), Minneapolis, Minnesota.

Examination of the engine (Rolls Royce Allison T63A700, serial number AE-400951) by a Federal Aviation Administration inspector from the Minneapolis Flight Standards District Office revealed that the Pc bleed line (from the governor to the fuel control) was leaking at the B-nut, which had come loose. The inspector stated that the operator had a spare engine at its facilities and that engine had torque lines painted onto the engine's fittings. The accident engine did not have torque lines painted onto its fittings.

The inspector stated that there is no requirement to use torque lines and that the new engine maintenance manuals now discuss the use of torque lines.

The time since the engine's last inspection was 59.4 hours.

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	34, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	March 21, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 10, 2011
Flight Time:	2565 hours (Total, all aircraft), 464 hours (Total, this make and model), 2499 hours (Pilot In Command, all aircraft), 82 hours (Last 90 days, all aircraft), 56 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N96SH
Model/Series:	47G-3B-1	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal; Restricted (Special)	Serial Number:	2927
Landing Gear Type:	Skid	Seats:	3
Date/Type of Last Inspection:	March 22, 2011 Annual	Certified Max Gross Wt.:	2950 lbs
Time Since Last Inspection:		Engines:	1 Turbo shaft
Airframe Total Time:	13752 Hrs at time of accident	Engine Manufacturer:	Allison
ELT:	Not installed	Engine Model/Series:	T63A700
Registered Owner:	Scotts Helicopter Services Inc	Rated Power:	317 Horsepower
Operator:	Scotts Helicopter Services Inc	Operating Certificate(s) Held:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	LVN	Distance from Accident Site:	5 Nautical Miles
Observation Time:	11:00 Local	Direction from Accident Site:	300°
Lowest Cloud Condition:	Scattered	Visibility	10 miles
Lowest Ceiling:	Unknown	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	70°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Minneapolis, MN (FCM)	Type of Flight Plan Filed:	None
Destination:	Lakeville, MN	Type of Clearance:	None
Departure Time:	11:00 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	44.669681,-93.23941 (est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Rick Grundman; Federal Aviation Administration; Minneapolis, MN
Original Publish Date:	November 7, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=79306

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