



National Transportation Safety Board Aviation Accident Final Report

Location:	Boulder City, NV	Accident Number:	WPR14LA084
Date & Time:	01/01/2014, 1507 PST	Registration:	N133GC
Aircraft:	EUROCOPTER EC 130 B4	Aircraft Damage:	Substantial
Defining Event:	Hard landing	Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Flight Test		

Analysis

The pilot stated that, during a postmaintenance operational check flight and while on final approach for landing, the fuel pressure indicator light illuminated, and the engine “flamed out.” The pilot lowered the collective to initiate an autorotation; however, due to the low altitude and airspeed, the helicopter subsequently landed hard and rolled over.

During a postaccident examination of the wreckage, a main fuel supply line B-nut fitting was found without the safety wire, and the nut was loose when turned by hand. Before the accident flight, the line had been disconnected during a task to replace the bidirectional suspension cross-bar assembly, and the accident flight was the first flight since the task was performed. According to the noncertificated maintenance technician who performed the task, the line was removed to defuel the fuel tank, which was contrary to manufacturer’s maintenance manual instructions. Based on the evidence, it is likely that the B-nut fitting was not properly tightened and safety-wired during reassembly, which allowed it to back off due to normal engine vibration and resulted in the interruption of the fuel flow during flight.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to fuel starvation as a result of the noncertificated maintenance technician’s failure to properly tighten and safety wire a B-nut fitting. Contributing to the accident was the maintenance technician’s failure to follow the manufacturer’s maintenance manual instructions.

Findings

Aircraft	Fuel - Not specified (Cause) Misc hardware - Incorrect service/maintenance (Cause)
Personnel issues	Installation - Maintenance personnel (Cause) Use of manual - Maintenance personnel (Factor) Maintenance - Maintenance personnel (Factor) Qualification/certification - Maintenance personnel (Cause)

Factual Information

On January 1, 2014, about 1507 Pacific standard time, a Eurocopter EC-130 B4, N133GC, landed hard during an autorotation, while on short final at the Boulder City Municipal Airport (BVU), Boulder City, Nevada. The commercial pilot was the sole person on board and was not injured. The helicopter came to rest on its right side and sustained substantial damage to the fuselage and tail boom. The helicopter was registered to Zuni LLC, and operated by Papillon Airways, Inc. (PAI), under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed for the post-maintenance operational check flight. A company flight plan was filed for the local flight that departed about 1457.

In a written statement, the pilot reported that she completed the post-maintenance operational check portion of the flight and was on short final to BVU, about 200 feet above the ground, with an airspeed of 40 to 50 knots. Shortly thereafter, the fuel pressure indicator light illuminated and the engine "flamed out". The pilot stated that she lowered the collective to initiate an autorotation, but did not have sufficient airspeed to successfully complete it. The helicopter's tailboom impacted the ground first during the accident sequence, followed by a hard landing. During the landing, the helicopter's skids separated and the fuselage sustained substantial damage.

A postaccident examination of the wreckage by a Federal Aviation Administration (FAA) inspector, revealed that safety wire was removed from a B-nut fitting that connects the main fuel supply to the aft side of the engine firewall, which delivers fuel to the engine Hydro Mechanical Unit. The B-nut fitting was loose when rotated by hand. The safety wire that was removed from the B-nut fitting remained attached to hardware [intermediate fitting] near the engine firewall.

Maintenance records revealed that the replacement of the bi-directional suspension cross-bar assembly was due and that the accident flight was the first flight since the task was performed.

According to the FAA, several maintenance technicians at PAI, stated that the selected method to gain access for the replacement of the bi-directional suspension cross-bar assembly, is contrary to the manufacturer's maintenance manual, by choosing to defuel and remove the fuel tank. They further stated that they defuel the tank by disconnecting the main fuel supply line that delivers fuel to the engine Hydro Mechanical Unit. This line is then attached to a tank on the ground, and the fuel is then pumped out from the tank with the use of the helicopter's fuel boost pump. This task was performed by a non-certificated technician. Several maintenance technicians were aware of the tasks performed to gain access to the bi-directional suspension cross-bar assembly, yet none of them made a statement reflecting they had followed the helicopter manufacturer's maintenance manual. The maintenance records showed no entry regarding the removal or disconnection of the main fuel supply line.

The manufacturer's maintenance manual [Section 63-31-00, 4-1] recommends that the bi-directional suspension cross bar assembly will be accessed by removing the main gear box and not by removing the fuel tank.

Following the accident, PAI implemented a 16-step independent control check to their Safety Control System which will be conducted by only experienced maintenance inspectors. This system is complemented by the addition of the inclusion of exclusively assigned Maintenance Ops Check Pilots who provide an additional level of oversight. An internal maintenance

training system was created with heavy focus on FAA CFR 39, 43, 91, to include onsite manufacturer's training programs that encompass airframe and engine systems.

History of Flight

Approach-VFR pattern final	Loss of engine power (total)
Autorotation	Hard landing (Defining event) Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	28
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	Yes
Medical Certification:	Class 2 Without Waivers/Limitations	Last Medical Exam:	05/15/2013
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	2157 hours (Total, all aircraft), 537 hours (Total, this make and model), 2126 hours (Pilot In Command, all aircraft), 63 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	EUROCOPTER	Registration:	N133GC
Model/Series:	EC 130 B4 B	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	3883
Landing Gear Type:	Skid	Seats:	8
Date/Type of Last Inspection:	01/01/2014, 100 Hour	Certified Max Gross Wt.:	5350 lbs
Time Since Last Inspection:	0 Hours	Engines:	Turbo Shaft
Airframe Total Time:	10321 Hours	Engine Manufacturer:	Turbomeca
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	Aerial 2B1
Registered Owner:	ZUNI LLC	Rated Power:	832 hp
Operator:	Papillon Airways Inc.	Air Carrier Operating Certificate:	Rotorcraft External Load (133); On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	PG9A

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KBVU, 2203 ft msl	Observation Time:	2315 UTC
Distance from Accident Site:	0 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	19° C / -6° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	4 knots, 320°	Visibility (RVR):	
Altimeter Setting:	30.18 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Boulder City, NV (KBVU)	Type of Flight Plan Filed:	None
Destination:	Boulder City, NV (KBVU)	Type of Clearance:	None
Departure Time:	1457 PST	Type of Airspace:	

Airport Information

Airport:	BOULDER CITY MUNI (BVU)	Runway Surface Type:	Asphalt
Airport Elevation:	2203 ft	Runway Surface Condition:	Dry
Runway Used:	27R	IFR Approach:	None
Runway Length/Width:	2166 ft / 60 ft	VFR Approach/Landing:	Forced Landing; Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None		

Administrative Information

Investigator In Charge (IIC):	Andrew L Swick	Adopted Date:	07/13/2015
Additional Participating Persons:	Paul Alukonis; FAA-FSDO; Las Vegas, NV Allen McKinney; FAA-FSDO; Las Vegas, NV Luis Garcia; Papillon Airways; Boulder City, NV John E Becker; Papillon Airways; Boulder City, NV		
Publish Date:	07/13/2015		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=88613		

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