



# National Transportation Safety Board

## Aviation Accident Data Summary

<b>Location:</b>	Boulder City, NV	<b>Accident Number:</b>	WPR17LA133
<b>Date &amp; Time:</b>	06/27/2017, 1403 PDT	<b>Registration:</b>	N151GC
<b>Aircraft:</b>	EUROCOPTER EC 130 B4	<b>Injuries:</b>	2 Minor, 5 None
<b>Flight Conducted Under:</b>	Part 135: Air Taxi & Commuter - Non-scheduled - Sightseeing		

### Analysis

The commercial pilot reported that, during an air tour flight, the engine lost total power. He initiated an autorotation to a nearby helicopter pad, during which the helicopter contacted power lines. He subsequently conducted an emergency landing on up-sloping terrain.

Postaccident on-site engine examination revealed that both the gas generator and power turbine were seized and could not be rotated by hand and that there was a significant amount of heat damage to the turbine blades and thermocouples. The vehicle and engine multifunction display recorded multiple engine temperature exceedances during the accident flight. Metal particles were found on the accessory gearbox magnetic plug. Further, no oil filter was found installed in the airplane.

Subsequent engine examination revealed that there was a hole in the centrifugal compressor. Examination further revealed that the No. 2 oil jet for the axial compressor rear bearing was obstructed, which resulted in oil starvation of the bearing and its subsequent failure. The bearing failure subsequently caused the gas generator rotating assembly to seize and resulted in the centrifugal compressor contacting the cover and creating the hole found in the component. Subsequent oil jet examinations revealed that coke pollution had obstructed the No. 2 oil jet. The lack of an oil filter precipitated the No. 2 oil jet obstruction and resulted in the axial compressor rear bearing deterioration.

The resultant engine inefficiency caused by the bearing failure and obstructed oil jet led to the need for higher fuel flow, which eventually resulted in an overtemperature/high pressure turbine failure and seizure of the gas generator and subsequent flameout; this was confirmed by data downloaded from the digital engine control unit, which recorded exceedances in the gas generator and free turbine speeds and an increase in fuel flow.

The manufacturer conducted the last maintenance, which was planned to be an overhaul of the accessory gearbox, 109.6 hours before the accident. During the maintenance, the oil filter was removed and discarded as part of the normal process for arrival inspection. A maintenance document review revealed that the overhaul was not due and that the manufacturer then sent the accessory gearbox back to the operator as is. However, the manufacturer did not inform the operator that it had removed the engine oil filter before returning the module, which is why no filter was found installed on the airplane.

### Flight Events

Enroute - Miscellaneous/other  
 Enroute-cruise - Loss of engine power (total)  
 Autorotation - Collision with terr/obj (non-CFIT)  
 Landing - Off-field or emergency landing

### Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A loss of engine power due to the failure of the manufacturer to reinstall the oil filter after it was removed for inspection, which led to coke pollution that obstructed the oil jet and resulted in the subsequent oil starvation of the axial compressor rear bearing oil and its subsequent failure.

### Findings

Aircraft-Aircraft power plant-Engine (turbine/turboprop)-Oil system-Not installed/available - C  
 Aircraft-Aircraft power plant-Engine (turbine/turboprop)-(general)-Failure - C  
 Aircraft-Fluids/misc hardware-Fluids-Oil-Fluid level - C  
 Personnel issues-Task performance-Maintenance-Installation-Maintenance personnel - C  
 Environmental issues-Physical environment-Object/animal/substance-Pole-Contributed to outcome

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	33
<b>Airplane Rating(s):</b>	None	<b>Instrument Rating(s):</b>	Helicopter
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Instructor Rating(s):</b>	Helicopter
<b>Flight Time:</b>	(Estimated) 3827 hours (Total, all aircraft), 1634 hours (Total, this make and model), 3748 hours (Pilot In Command, all aircraft), 118 hours (Last 90 days, all aircraft), 42 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	EUROCOPTER	<b>Registration:</b>	N151GC
<b>Model/Series:</b>	EC 130 B4 B	<b>Engines:</b>	Turbo Shaft
<b>Operator:</b>	Papillon Grand Canyon Helicopters	<b>Engine Manufacturer:</b>	Turbomeca
<b>Operating Certificate(s) Held:</b>	Commercial Air Tour (136); Rotorcraft External Load (133); On-demand Air Taxi (135)	<b>Engine Model/Series:</b>	Arriel 2B1
<b>Flight Conducted Under:</b>	Part 135: Air Taxi & Commuter - Non-scheduled - Sightseeing		

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KBVU, 2202 ft msl	Weather Information Source:	Weather Observation Facility
Lowest Ceiling:		Wind Speed/Gusts, Direction:	7 knots / 13 knots, 190°
Temperature:	39° C	Visibility	10 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BOULDER CITY, NV (BVU)	Destination:	BOULDER CITY, NV (BVU)

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 Minor, 4 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Latitude, Longitude:	35.967500, -114.892222 (est)		

## Administrative Information

Investigator In Charge (IIC):	Maja Smith	Adopted Date:	02/26/2019
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	<a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=95448">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=95448</a>		

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