



# Aviation Investigation Final Report

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<b>Location:</b>	Philadelphia, Pennsylvania	<b>Accident Number:</b>	ERA20CA135
<b>Date &amp; Time:</b>	March 21, 2020, 15:42 Local	<b>Registration:</b>	N982SS
<b>Aircraft:</b>	AugustaWestland AW119MKII	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Part(s) separation from AC	<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Flight test		

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## Analysis

The pilot and the flight test engineer were completing a production test flight of the helicopter. A review of a surveillance video showed that, as they were preparing to land, the lower section of the left side of the engine cowling folded back and struck all four main rotor blades, which resulted in substantial damage to the blades. According to the operator/manufacturer, postaccident examination of the helicopter revealed that none of the fasteners on the left side of the cowling remained attached and that three of the fasteners were missing. No evidence of any preaccident discrepancies with the fasteners, the cowling, or the design and conformity of the helicopter structure was found.

According to the manufacturer/operator, before the flight, the pilot reported to maintenance personnel that he had seen that the fasteners attaching the generator duct to the right side of the same cowling appeared long. Maintenance personnel then removed the one-piece engine cowling, and a mechanic then replaced the generator duct fasteners and reinstalled the cowling with the help of another mechanic. The mechanic said he specifically fastened each of the fasteners on the cowling himself and checked all the fasteners after the cowling was reinstalled. Once the cowling was reinstalled, a quality inspector visually inspected the engine cowling fasteners. He did not see any anomalies and signed off that the work had been completed. The flight test engineer performed another preflight inspection of the helicopter and did not note any issues with any of the cowling fasteners. It is likely that the mechanic did not properly install the cowling fasteners before the flight, which resulted in the cowling coming loose and striking the main rotor blades.

## Probable Cause and Findings

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

The in-flight failure of the lower left side of the engine cowling due to the mechanic's improper installation of the fasteners, which resulted in the cowling impacting all four main rotor blades.

## Findings

<b>Aircraft</b>	Fasteners - Incorrect service/maintenance
<b>Personnel issues</b>	Installation - Maintenance personnel
<b>Aircraft</b>	(general) - Failure

## Factual Information

### History of Flight

<b>Prior to flight</b>	Aircraft maintenance event
<b>Approach</b>	Part(s) separation from AC (Defining event)

### Pilot Information

<b>Certificate:</b>	Airline transport; Commercial; Private	<b>Age:</b>	53, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Helicopter	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	October 10, 2019
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	February 11, 2020
<b>Flight Time:</b>	4629 hours (Total, all aircraft), 902 hours (Total, this make and model), 2337 hours (Pilot In Command, all aircraft), 33 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	AugustaWestland	<b>Registration:</b>	N982SS
<b>Model/Series:</b>	AW119MKII	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	2020	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Special flight (Special)	<b>Serial Number:</b>	14962
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	8
<b>Date/Type of Last Inspection:</b>		<b>Certified Max Gross Wt.:</b>	6283 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Turbo shaft
<b>Airframe Total Time:</b>	6.1 Hrs at time of accident	<b>Engine Manufacturer:</b>	Pratt&Whitney
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	PT6B-37A
<b>Registered Owner:</b>	On file	<b>Rated Power:</b>	900 Horsepower
<b>Operator:</b>	On file	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	PNE,120 ft msl	<b>Distance from Accident Site:</b>	0 Nautical Miles
<b>Observation Time:</b>	15:54 Local	<b>Direction from Accident Site:</b>	0°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots / 16 knots	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.01 inches Hg	<b>Temperature/Dew Point:</b>	13°C / -4°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Philadelphia, PA (PNE)	<b>Type of Flight Plan Filed:</b>	VFR
<b>Destination:</b>	Philadelphia, PA (PNE)	<b>Type of Clearance:</b>	VFR
<b>Departure Time:</b>	14:50 Local	<b>Type of Airspace:</b>	Class D

## Airport Information

<b>Airport:</b>	Northeast Philadelphia PNE	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	120 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>		<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>		<b>VFR Approach/Landing:</b>	Full stop

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	40.083332,-75.001388(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Read, Leah
<b>Additional Participating Persons:</b>	Roberto Possumato; FAA/FSDO; Philadelphia, PA Mikael Amura; ANSV Giorgio Dossena; Leonardo S.p.a Christopher Lemieux; Agustawestland Philadelphia Corporation; Philadelphia, PA
<b>Original Publish Date:</b>	June 29, 2020
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	This accident report documents the factual circumstances of this accident as described to the NTSB.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=101114">https://data.nts.gov/Docket?ProjectID=101114</a>

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