



NATIONAL TRANSPORTATION SAFETY BOARD

**Office of Aviation Safety
Western Pacific Region**

February 27, 2020

SUMMARY OF AIRPLANE EXAMINATION

(WPR18FA260)

This document contains no embedded photos.

A. ACCIDENT

Location:	Billings, Montana
Date:	September 12, 2018
Aircraft:	RotorWay Exec, N166LC
NTSB Investigator-in-Charge	Thomas Little

B. EXAMINATION PARTICIPANTS

Thomas Little	Bobby Radtke
Senior Aviation Accident Investigator	Principal Maintenance Insp
National Transportation Safety Board	Federal Aviation Administration
Federal Way, Washington	Helena, Montana

C. SUMMARY

On September 12, 2018, about 1245 mountain daylight time, a Robert L. Coons RotorWay Exec 90 experimental, amateur-built helicopter, N166LC, was substantially damaged after colliding with a hangar while maneuvering at Billings Logan International Airport (BIL), Billings, Montana. The non-rated pilot, who was the registered owner of the helicopter, was fatally injured. Visual meteorological conditions prevailed for the flight, which was being operated in accordance with Title 14 *Code of Federal Regulations* Part 91, and no flight plan was filed. The local flight departed at an unknown time.

Local airport personnel reported that the pilot had been practicing takeoffs and landings, and that as he was approaching his hangar at the conclusion of the flight, impact the top of the hangar and crashed. It was also reported that the pilot had purchased the helicopter a few years before the accident and was in the process of finalizing the finishing construction of the kit.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site Examination

A survey of the accident site by the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) and a Federal Aviation Administration (FAA) aviation safety inspector, revealed that the helicopter impacted the top section of a hangar while maneuvering/hover-taxiing near his hangar with its main rotor blades, after which it came to rest with the majority of the helicopter oriented upward on about a 30-degree angle and against the front of the hangar on a westerly heading. The tail boom was observed laying on the ground directly behind the helicopter and still attached to the aft frame. Both skids had separated and came to rest about 15 ft in from of the main wreckage. It was also observed that the helicopter's left anti-torque pedal for the right-seat pilot position was broken. All components necessary for flight were recovered at the accident site.

2.0 Follow-up examination notes

A follow-up examination of the airframe and engine on September 14, 2018, was performed at the pilot's hangar where the helicopter was normally stored. The airframe examination was performed by the NTSB IIC. A local airframe and powerplant mechanic performed an examination of the engine, under the supervision of the IIC. As a result of both examinations, it was determined that no mechanical anomalies with either the engine or airframe were discovered that would have precluded normal operation.

2.0.1 Airframe examination notes

The helicopter impacted the north side and front of a 25 ft tall hangar, which was in close proximity to the pilot's hangar, initially with its 2 main rotor blades. The fuselage then impacted the hangar's forward door section, coming to rest partially inside the hangar, facing upward on about a 30-degree and on a magnetic heading of about 280 degrees. There was a presence of fuel as reported by first responders; there was no postcrash fire. Flight control continuity was confirmed throughout the aircraft. The top and both sides of the cabin/cockpit were destroyed due impact forces. All components necessary for flight were accounted for at the accident site.

Both main rotor blades remained attached to their respective hubs at all attach points. The inboard 40 inches of blade #1 remained attached to its hub, while the outboard 100 inches of the blade was bent aft about 180 degrees. The trailing edge of blade #2 was separated and open, which started about 15 inches from the hub; skin separation was observed to both the top and bottom of the blade. The entire span of the blade exhibited areas of being bent, twisted and deformed. Moderate leading-edge damage was observed.

The swash plate and scissors remained intact and not damaged. The lower engine mount was observed broken and deformed. All primary connections from both main rotor blades were intact and observed not to have been compromised. Additionally, all connections from the swashplate to the main rotor hub were in place and not compromised.

Tail rotor and gearbox assembly was observed to be intact at all connection points and not damaged. Both tail rotor blades remained intact and secure, with no damage observed to either blade. Tail rotor driveshaft remained intact and not damaged. Control continuity was observed throughout the driveshaft, from the tail rotor assembly up to the connection with the transmission.

The transmission remained in place and not compromised. The aft spine coupling was observed separated from the engine coupling but not damaged. The transmission belt remained in place, intact, and tight to hand movement.

The vertical stabilizer was observed bent and twisted at mid-span. The stinger was not damaged

The tail boom observed to have been almost entirely severed at the aft engine mount area. It was located just aft of the main helicopter body

Both the left and right skids had separated from the helicopter and were located about 18 ft west of the main wreckage.

The right horizontal stabilizer was observed bent slightly inboard, while the left stabilizer was observed bent, twisted, and deformed from outboard to mid-section.

Both cyclins and collectives were not damaged. All connections were intact and not compromised.

Both anti-torque pedals for the left pilot position were not damaged. The right anti-torque pedal for the right pilot position was not damaged. However, the left anti-torque pedal was found separated at the weld point. The separated pieces of the anti-torque pedal were retained by the NTSB IIC for further examination.

2.0.2 Engine examination notes

An examination of the engine revealed that it had come to rest intact and was observed to have not been compromised as a result of the impact sequence. It remained attached to the airframe at all attach points with no deformation observed. The examination of the engine revealed nothing to indicate that a catastrophic event had occurred during the time the engine was operating prior to the accident.