

Mitchell Gallo
Senior Aerospace Engineer
Aviation Safety - Central Region

Date: March 25, 2024

Subject: CEN23LA247, Memorandum of Record

The flight instructor stated that he was providing flight instruction to the student pilot, who was his son, at the time of the accident. The flight instructor rented the helicopter from the operator was not employed by the operator. According to the operator's rental agreement, the flight instructor and was not allowed to provide flight instruction and was not to allowed for anyone else to fly the helicopter.

The flight instructor stated they performed a vortex ring during accident flight. The flight instructor stated that student pilot told him that the helicopter was not producing power. The flight controls were then transferred to the flight instructor, and the helicopter started to descend. The flight instructor said he then proceeded to turn northbound and land on Cedar Lake. The flight instructor said that when he set the helicopter down into the lake, he pushed the cyclic to the left so that the rotor would hit the water. The helicopter sustained substantial damage to the tail boom and vertical stabilizer.

The flight instructor stated that when the student pilot said the helicopter was not producing power, the engine gauges indicated 24 inches of manifold pressure and 103% and 104% for the engine and rotor speeds, respectively. When asked if there was a low rotor warning, the flight instructor said there was a low rotor warning at about 150 ft agl. When the flight instructor was asked if there was a low rotor warning prior to 150 ft agl, the flight instructor said that he did not recall a prior low rotor warning. The flight instructor did not mention there was a squealing noise during any part of the accident flight.

A National Transportation Safety Board Pilot/Operator Aircraft Accident/Incident Report, Form 6120.1 was not received from the flight instructor upon initial request on June 21, 2023. Upon a second request, the pilot provided

Form 6120.1, on March 25, 2024. The flight instructor checked that the purpose of the flight was personal on Form 6120.1. He stated on Form 6120.1 that there was a squealing noise, a low rpm light and horn about 250 ft agl, and the helicopter was rapidly losing altitude.

A witness video showed the helicopter descend above the lake, stop the descent, and enter a hover followed by a left hover turn. The helicopter then stopped turning and entered a descent during which the helicopter entered the water and became submerged up to the bottom of the helicopter fuselage. While submerged, the helicopter began to rotate to the right and climb out to the bottom of the skids while rotating right before descending to being completely submerged.

The Helicopter Flying Handbook (FAA-H-8083-21B), Chapter 2. Aerodynamics of Flight, states, "...as the helicopter begins to accelerate from a hover, the rotor disk becomes more efficient due to translational lift (see translational lift on page 2-19). The result is excess power over that which is required to hover. Continued acceleration causes an even larger increase in airflow through the rotor disk (up to a maximum determined by drag and the engine's limit of power), and more efficient flight." Chapter 9, Basic Flight Maneuvers, Hovering Turn, states, "It should be noted that during a turn to the left, more power is required because left pedal pressure increases the pitch angle of the tail rotor, which, in turn, requires additional power from the engine."