

Cirrus cartwheels after hitting wake turbulence

By NTSB · December 7, 2016 ·

The student pilot was conducting a solo flight in a Cirrus SR20 at an uncontrolled airport in Fort Collins, Colo. An airport video showed the student attempting to land on a runway about 30 seconds after the departure of a Sikorsky UH-60 helicopter.

The student pilot reported that he was aware of the helicopter and that he attempted to land long.

However, just before touchdown, the plane encountered the wake turbulence of the helicopter and then entered an uncommanded steep left bank.

The student attempted to counter the left bank and go around, but he was unable to maintain control.

The plane hit left of the runway and cartwheeled, resulting in one serious injury.

Current FAA pilot guidance, including the Airman's Information Manual and an advisory circular on aircraft wake turbulence, does not recommend separation criteria for a small airplane following a helicopter. It is likely that the student pilot

did not comprehend the significance of the wake turbulence that the helicopter would generate during departure.

The NTSB determined the probable cause as the student pilot's failure to comprehend the significance of the wake turbulence that a preceding helicopter would generate during departure, which resulted in a loss of airplane control during landing. Contributing to the accident was the lack of FAA wake turbulence separation criteria for a small airplane following a helicopter.

NTSB Identification: [CEN15LA069](#)

This December 2014 accident report is provided by the [National Transportation Safety Board](#). Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

ABOUT NTSB

The National Transportation Safety Board is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation, including railroad, transit, highway, marine, pipeline, and commercial space. It determines the probable causes of accidents and issues safety recommendations aimed at preventing future occurrences.

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Comments

Pete Wilson says

December 10, 2016 at 8:55 am

I am a ground instructor, and fully agree that the AIM, also the FAA training manuals do not include

the dangers of Helicopter wake turbulence.

I include the dangers of flying close to operating helicopters to my students when discussing wake turbulence avoidance.

I do wonder why this very important aspect is omitted by the FAA, and the NTSB hasn't picked up on it ?

Warren Webb Jr says

December 10, 2016 at 4:46 pm

Disagree. Pilot's Handbook of Aeronautical Knowledge FAA-H-8083-25B page 5-9. "A hovering helicopter generates a down wash from its main rotor(s) similar to the vortices of an airplane. Pilots of small aircraft should avoid a hovering helicopter by at least three rotor disc diameters to avoid the effects of this down

wash. In forward flight, this energy is transformed into a pair of strong, high-speed trailing vortices similar to wing-tip vortices of larger fixed-wing aircraft. Helicopter vortices should be avoided because helicopter forward flight airspeeds are often very slow and can generate exceptionally strong wake turbulence.” Similar statements are in AIM 7-3-7.

Lynn Riggs says

December 8, 2016 at 7:39 pm

The field I flew out of in Vietnam was used by the O-1 company I was in and helicopters, UH-1 and CH-47's. Operations around them was always a problem and we would not land or takeoff if a helicopter was landing or taking off. One of our O-1 pilots was landing with a right cross wind and a CH-47 was on the left side of the runway that was at flight ideal and at flat pitch he said, but in reality he had a little pitch in to keep the rotor blades from bouncing. The combination of the right cross wind and the vortex of the rotor system sucked the O-1 and plastered it on the side of the CH-47. If he would have landed further down the runway he would have been alright but he had a long day and was not thinking clearly. He was not hurt but the O-1 needed major repairs. It took our crews about a month to get it back in the air. The CH-47 had minor damage. Light aircraft need to stay away from helicopters.

MrBill says

December 8, 2016 at 4:35 pm

Didn't a Senator die a few years ago, when a helicopter went underneath his plane looking to see if the landing gear was down, and the vortex/downdraft caused them to collide and crash?

Bill S. says

December 10, 2016 at 11:34 am

Senator John Heinz, April 4th, 1991 outside of Philly.

Joe Henry Gutierrez says

December 8, 2016 at 11:41 am

When ever there is a judgment call to make concerning wake turbulence, don't stop to think about it simply go around and give the situation a few minutes to dissipate ! There is nothing in the rule books that says you have to land, and anyone that teaches student's to try an figure out what to do when vortices are present, whether to land short or long is not good to say the least, simply go around and live to tell about how you outsmarted and correctly landed your airplane..Wake turbulence is nothing to toy with, It happened to me when I was a student pilot when a twin aero commander cut me off on short final because his radios were not working, I sure went for an "E" ride, Like the saying goes, " when in doubt, pull it out". nuff said.

Paul says

December 8, 2016 at 5:43 am

Helicopter induced turbulence caused by the downwash from the rotor blades (disc) especially in hover is every bit as strong and dangerous (if not more so) as that produced from wing tip vortices of fixed wing aircraft plus the wake turbulence caused by forward movement in transition from hover to forward flight. The heavier the helicopter the greater the rotor downwash in hover and transition. The FAA committed a serious error in overlooking this hazard to light airplanes during takeoff and landing following a helicopter.

d says

December 8, 2016 at 5:41 am

should have landed short since helo was taking off



Rivegauche610 says

December 8, 2016 at 5:26 am

I'm just awestruck dumb with amazement that the NTSB didn't blame the pilot for not doing something he had absolutely no reason to know about or understand.

Phil says

December 7, 2016 at 10:51 am

It might not be a bad idea to add some guidance on helicopter wake turbulence to the Airman's Information Manual.

John says

December 8, 2016 at 9:34 am

Guidance on small plane operations near helicopters is found in the AIM on page 510. "In forward flight, departing or landing helicopters produce a pair of strong, high-speed trailing vortices similar to wing tip vortices of larger fixed wing aircraft. Pilots of small aircraft should use caution when operating behind or crossing behind landing and departing helicopters." It appears the student's CFI/flight school failed to properly instruct the student. I'm glad the student survived, and am sad that serious injury resulted.

Warren Webb Jr says

December 8, 2016 at 5:19 pm

Agree. "Current FAA pilot guidance, including the Airman's Information Manual and an advisory circular on aircraft wake turbulence, does not recommend separation criteria for a small airplane following a helicopter." I don't think that's correct. In AIM 7-3-7 Helicopters, it indicates "departing or landing

helicopters produce a pair of strong, high-speed trailing vortices similar to wind tip vortices of larger fixed wing aircraft” so the recommendations in 7-3-6 Vortex Avoidance Procedures b.1.Landing behind a larger aircraft – same runway, do provide guidance for helicopters.

I had a scary encounter with an executive helicopter (Sikorsky S-76) at Hartford-Brainard KHFD. Over many years, these helicopters would be instructed to overfly taxiway Alpha to the north helicopter pad and there must have been hundreds of these operations without incident. Then one day we were cleared for takeoff. During initial climb, there was an arriving Sikorsky S-76 overflying taxiway Alpha at low altitude about 2000 feet ahead of us, normally another routine operation. Taxiway Alpha is 300' west and parallel of the runway. However this time, a strong crosswind carried the rotorwash to the runway, causing us to roll significantly to the left just seconds after liftoff. Full right aileron and rudder would not stop the increasing left bank and we were approximately 100 ft above the surface climbing somewhere between V_x and V_y so we were at about the maximum climb performance. Pointing the nose higher would only reduce climb performance but maybe more critically would further erode aileron authority and increase our roll to the left which could not be stopped and which felt like we were heading toward a knife-edge attitude. Also our ground track by now was 30-45 degrees to the left. So I lowered the nose to get an increase in airspeed and more aileron/rudder authority and in this case, that worked. I was able to regain full control but not before we had deviated to over the mid-field apron 700ft left of the runway. There were discussions with ATC and the FAA about the incident – it was considered a ‘perfect storm’ scenario, but it did lead to extra precautions and awareness with helicopter operations.

After that experience I have maintained MUCH more distance from helicopters and treat the bigger ones as though they are airliners.



December 7, 2016 at 8:56 am

Honestly, it never occurred to me to be worried about a *helicopter's* wake turbulence either. I salute you student pilot for teaching me this so I don't do it.

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