

CALLBACK

From NASA's Aviation Safety Reporting System



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CAUTION: Wake Turbulence

All pilots are taught to be wary of wake turbulence, the "horizontal tornadoes" that trail behind the wingtips of any aircraft in flight, especially larger and heavier aircraft. The greatest hazard from wake turbulence is induced roll and yaw, particularly during the takeoff and landing phases where there is little altitude for recovery. A Captain's recent report to ASRS offers a graphic example of wake turbulence hazard:

■ [My] PA31-350 was on visual approach to Runway 18, following a B727. The 727 made a normal, uneventful landing and was in the process of taxiing clear of the active runway when the Tower controller requested [that we] "go around and maintain runway heading" due to traffic still on the runway. I complied with the Tower controller's request and applied power and began a go-around from 200 feet, when my aircraft was "rocked" by the wing tip vortices of the already landed B727. Wind at the time was reported by the ATIS as "calm."

My PA31-350 aircraft entered an uncommanded right bank of 60 degrees... I confirmed that both engines were making full power. I applied opposite aileron input to counteract the uncommanded bank. I was unable to escape the effects of the wing tip vortices. I exited the vortex approximately 800 horizontal feet later... The airplane wings leveled, and then the aircraft entered a second uncommanded bank of 20-30 degrees, this time to the left. At approximately 1/4 the way down the runway, I regained complete control...

The Tower controller...requested that I join left downwind, cleared to land. I followed the request and landed safely.

Upon taxiing clear of the active runway, the Tower/Ground controller asked, "Is everyone OK?" Upon reaching the parking area...I discovered that there were no injuries.

When the Tower gave me clearance to land, I looked to see where the 727 was on the approach. At the time I felt I was far enough behind the 727 to limit my exposure to his wake turbulence. Obviously, this was incorrect...

The *Aeronautical Information Manual* (Chapter 7, Section 3) and Order 7110.65N, *Air Traffic Control* (Paragraphs 2-1-19 and 2-1-20) explain the respective pilot and controller responsibilities for wake turbulence avoidance. ATC is responsible in both VFR and IFR conditions for issuing wake turbulence advisories. An airport's air traffic controllers will provide an advisory to any VFR aircraft on its frequency that may, in the controller's opinion, be adversely affected by wake turbulence from a larger aircraft. This advisory will give the position, altitude (if known) and direction of flight of the larger aircraft, followed by the phrase, "CAUTION – WAKE TURBULENCE."

However, if a pilot accepts a *visual approach clearance* to follow an aircraft, the pilot accepts responsibility for separation and wake turbulence avoidance. Because wake turbulence is unpredictable, the controller is not responsible for predicting its existence or effect.

When any doubt exists about maintaining safe separation distances between aircraft during approaches, pilots should ask the Tower controller for updates on separation distance and aircraft ground speed.



Respect Rotary Wing Wake

Helicopter wakes may be of significantly greater strength than those from a fixed wing aircraft of the same weight. The strongest wake can occur when the helicopter is operating at lower speeds (20-50 knots), as discovered by this General Aviation fixed wing pilot:

■ While on downwind leg [to uncontrolled airport], a light helicopter entered final approach from the north. When turning from base to final, I had him in sight near the runway threshold, slightly right of the runway. He proceeded to move right to the parallel taxiway. I continued the approach, not considering rotor wash to be a factor as he was now at the taxiway and standard glide path could have me above the area he had been near the runway.

Approximately 200-300 feet past the runway threshold, the aircraft suddenly rolled right, yawed right, and sank. Opposite control input failed to arrest the roll or sink, however it did seem to slow the yaw. [The aircraft] impacted the ground right wing low, yawed slightly right and nose high. The aircraft became airborne again and I was able to maintain control and land in the grass parallel to the runway. Damage included a collapsed nose gear assembly, prop strike, gear doors and lower cowl.

This event was classified as an incident rather than an accident. Rotor vortices circulate outward, upward, around, and away from the main rotor(s) in all directions. Pilots of small aircraft should operate three or more rotor diameters away from any helicopter in a slow hover taxi, or stationary hover. ▲

ASRS Recently Issued Alerts On...

CL65 uncommanded yaw and roll at FL310
Dassault Falcon 20 brake handle malfunction
EMB-145 main and auxiliary trim actuator failure
Taxiway "hold short" markings at several airports
Runway conflict between a departing G-IV and taxiing B727

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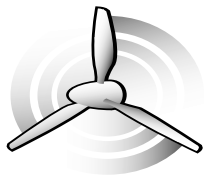
Air Carrier / Air Taxi Pilots	2155
General Aviation Pilots	735
Controllers	69
Cabin/Mechanics/Military/Other	171
TOTAL	3130

As the Prop Turns

A Cessna pilot influenced by “get-home-itis” ignored obvious signs during a run-up and takeoff that all was not right with the prop control.

■ *On run-up prior to takeoff, propeller control was binding but seemed to work normally when forced into position. [I] departed Runway 24. On takeoff, power seemed deficient. I checked oil pressure, temperature and airspeed; all looked normal so I continued. Once in the air I spotted low RPM, approximately 2100, and a low rate of climb. I declared an emergency to Tower, [who] cleared me to land on any runway. I made a gentle bank turn to land successfully on Runway 33. On the ground I found that although the prop control was pushed full forward, it had actually stopped while still partially out. The mechanic found a binding propeller control cable... [I] should have rejected the takeoff while still on the runway. I...was influenced by “get-home-itis.”*

Procedures *not* recommended: Use of force on a cockpit control, and ignoring a low RPM setting during takeoff.



Propped to a Stop

A General Aviation pilot landed at an airport in the early evening to refuel his airplane on a cross-country flight. All proceeded normally until it was time to restart the engine.

■ *After paying for the fuel I made a walk-around inspection of my airplane, then buckled back into the pilot seat. When I engaged the starter, I heard only the “whirring” sound of the starter; the propeller did not turn... I turned off the power, exited and walked to the front of the plane to investigate further... I decided to move the propeller a bit, thinking that might reengage the gears. As I started to move the propeller, the engine started. I immediately jumped away, landing on my right hand and both knees. As I got up, I could see the airplane start to move. Shocked and hoping to stop the aircraft, I ran towards the pilot’s side door, but was unable to catch [the airplane] before it accelerated away from me. The plane moved approximately 150 feet toward a fence, where it was stopped when it impacted a truck parked [there]... Except for some scrapes to my hand and knees, no one was injured in the incident.*

I was informed that although my airplane was substantially damaged, this incident did not meet the definition of an “aircraft accident” as defined in NTSB 830...

Most hand-propping accidents occur either because an airplane is left unattended, or because an unqualified person is at the controls. Pilots who undertake this procedure should always assume that the propeller is “hot” (will start of its own volition) and have a qualified, fully briefed person at the controls. The FAA also recommends that prior to start-up, the aircraft rotating beacon or strobe should be turned on to alert persons nearby that the propeller will be set in motion. ▲

Sensory Overload

An air carrier Captain recently filed this report with ASRS describing “electronic sensory saturation during a critical phase of flight.”

■ *Descending through 7,000 feet, on radar vectors for the ILS Runway 24L, our flight warning computer generated the level III alert, “Landing gear not down.” We were well above the alert envelope and above landing gear operating speed. Right away, I noticed the left seat radar altimeter was reading zero feet. This erroneous input was generating the alert. On the Fokker 70 you cannot silence the landing gear warning without lowering the wheels. We were cleared to 3,000 feet and given a heading for a radar base leg, still above landing gear operating speed... Since the right seat radar altimeter was indicating properly, we attempted to switch the flight director to the First Officer side.*

As the descent continued, the flight warning computer added the aural warning, “Too low gear.” About this time we were given a heading to intercept the ILS final while still descending to 3,000 feet... It was at this time the TCAS added, “Traffic, Traffic!” As I was looking for the traffic I had to compete with a continuous level III alert chime, “Too low gear” aural alert and now the aural TCAS traffic alert. Again, none of these warnings can be silenced...

I looked for the traffic... Sure enough, there was a single-engine high wing aircraft in a left climbing turn. I called out “traffic in sight” about the same time the TCAS started calling, “Climb, Climb!” The pilot flying followed the TCAS guidance and we narrowly missed this aircraft. Somewhere in this sequence the landing gear alert ended... I changed to Tower and the rest of the approach and landing was normal.

As I replay these events, a couple of things bother me... I communicated to the pilot flying that I had the aircraft in sight. He could have interpreted this to mean there’s no immediate conflict... Had he not followed the TCAS guidance, I think we would have hit the other aircraft.

If I had to do it over again, I would do the following:

- ✈ *If switching flight directors didn’t cancel the landing gear alert, I would have slowed and put the gear down.*
- ✈ *Give the pilot flying an action command before announcing I had the traffic in sight (i.e., “Follow the TCAS” then “Traffic in sight”). Hopefully this would eliminate the possibility of miscommunication. ▲*