



## SAFETYGRAM

Sep 07

### **Blast Hazard**

Blast hazard – you don't want to be caught in the frag pattern....

What is jet blast? I only ask because several articles available tie jet blast to wake turbulence. They are two different hazards. Wake turbulence is caused by the wing; jet blast is caused by the engine. Wake turbulence is only produced when the wing is producing lift (rotation to touchdown) while jet blast is produced anytime a jet engine is running. Of note, propeller blast acts in much the same way as jet blast and should be treated with just as much respect.

A recent aero club encounter involved a Cessna 172 and a Boeing 767. The 172 taxied to a position left of the 767 as directed by ground control. When the 767 powered up and turned away, the 172 was blown onto its wingtip and struck the prop. Thank goodness there were no injuries. Another case involved an aero club C206 being repositioned by an IA. He was cleared to taxi behind a row of C-130s. As he taxied behind one of them, ground gave the C-130 permission to conduct a high power maintenance engine run. Before the mechanic could react, the prop wash of the C-130 sent the C206 cart wheeling across the ramp. Luckily, the mechanic was not seriously injured.

Because of these two encounters with jet blast/prop wash, and others within the aero club world and general aviation let's examine this threat; damaged airplanes and the potential for damaged people always merit discussion. How big is the jet blast threat area behind an airplane? In a study accomplished by the FAA some interesting information came to light. Engines up to 50,000 pounds of thrust were used in the study (some of today's engines can produce twice that), and the blast danger area is much bigger than one would think. Even at low power settings, jet engines can produce a danger area in excess of 200 feet behind the engine. In this area, wind speed exceeds 100 knots in places, and exceeds 30 knots to the limits of the danger area. When the engines are operating at takeoff power, the danger area extends to nearly 1,600 feet behind the engine and in the area up to 40 feet outside each wingtip, with a heavy emphasis on the area

out to nearly 600 feet behind the engine. While 30 knots of wind doesn't seem like a real hazardous situation, aero club airplanes have been blown onto wingtips and props with less than 30 knots of wind. Of note, AFMAN 34-232 prohibits flight when forecast winds are greater than 30 knots, and directs termination as soon as practical if wind exceeds 30 knots after airborne. That guidance is provided due to excessive risk to light aircraft as they taxi cross and downwind. That does not mean flight is prohibited when jets are flying, but it is meant to emphasize the possible threat of jet blast winds even when they have slowed to 30 knots at the outer edges of the danger area.

So, how much space is needed between jet engines and aero club aircraft? Ready for the answer.....It depends! The Aeronautical Information Manual gives the following direction; "During ground operations and during takeoff, jet engine blast can cause damage and upsets if encountered at close range. Exhaust velocity versus distance studies have shown a need for light aircraft to maintain adequate separation behind large turbojet aircraft." Not super helpful is it? If the jet is at idle, a minimum of 300 feet behind should be safe, but if the power is pushed up 300 feet can be catastrophically close and more like 2,000 feet would be safe. In addition, keep the possible actions of the jet's crew in mind when determining how close is to close. Remember, 30 knots on the nose is easier to control than 30 knots of crosswind.

If you don't know what the jet's power setting is, query ground control and if in doubt, err to the side of "far, far, away." If you see an aircraft that concerns you get on the horn - don't be afraid to ask ground, or to let your 'big brother' know you are there. Avoid being the next victim!

**FLY SAFE!**



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