Safety Thoughts

Are You Blind?

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Last month we talked about a mid-air nightmare emphasizing the importance of keeping heads-down time to a minimum. This month we'll consider a related topic -- the blind spot in our eyes. Under certain conditions this phenomenon could prevent a pilot from seeing an airplane even if he/she is looking outside. The blind spot is nothing new to most, if not all, pilots but is worth revisiting from time to time. Let's take a look at it again using the two small aircraft pictured above. Hold this page at arms length in front of your eyes. Close your left eye and stare at the center of the Cessna while moving the page slowly toward you. The RV disappears. Now close your right eye, look at the center of the RV and bring the page closer. The Cessna disappears. The brain cleverly fills in the blank spot to match the surrounding area.

The blind spot is about ¾ inch in diameter at one foot from the eye. At a distance of 800 feet, however, it's about 50 feet across and could easily hide an airplane. Move out to one mile and the blind spot is over 300 feet. That's enough to hide a 747 or our entire HomeWing Squadron leading the Blackjacks in a huge diamond formation. Something you really don't want to miss! Remember last month we said two aircraft (at RV speed) heading toward one another will close one mile in less then 10 seconds.

So, what's up with this blind spot? Light entering the eye is focused on the retina at back of the eye where millions of rods and cones sense incoming rays. They send their signals to an area called the optic disc, where they connect to the optic nerve. This circular area, the optic disc, has no rods or cones and is unable to sense light – resulting in the "blind spot."

Normally the blind spot in one eye is covered by vision in the other eye so objects are not missed. A person with only one functional eye can overcome the blind spot by constantly moving the eye so an object will not remain in that spot. Those of us with two good eyes could still "lose" an object (perhaps a plane) by staring in one direction while something (side or center windscreen trim, roll bar, pedestal mounted mag compass, large nose, etc.) blocks vision in one eye.

Let's look at a couple examples. First, stare at a prominent object (doorknob, light switch, etc.) ten or more feet away. Now, hold up your hand at arm's length to block vision of that object with your left eye. You'll see it only in your right eye. Keep your hand in place and slowly move your eyes to the left (maintaining the same elevation). The object disappears. If you're outside, try it with a car at around 300 feet away or an airplane at 800 plus feet.

What about that "large nose" -- you thought I was joking, right? For those of us blessed with a particularly prominent proboscis, try this. Look at the object again, but this time turn your head so left-eye vision is blocked by your nose (those with a small nose can experience it by placing a finger on your nose to make it larger.) Now, slowly move your eyes (don't turn your head) to the left. It's gone again.

The nose deal is not likely to be a problem since it requires a somewhat contorted position – but the other examples using cockpit obstructions are quite real. The normal blind spot is about 15 degrees outboard of center-vision for each eye. Anything in your airplane that blocks vision in that position can create a blind spot (obviously, if the obstruction is wide enough it will block both eyes). The solution, of course, is to ALWAYS keep head and eyes moving. We normally do, but at times could we be tired and maybe a bit bored on a long cross-country flight over uninspiring terrain? Maybe day-dreaming a bit? Could we stare long enough for that unseen plane one mile away to come within 200 feet where its wingtips begin to appear? Remember that the "collision" airplane will have no relative motion in the windscreen and could remain in a blind spot if we let it.

All this might be just an interesting academic exercise. It's PROBABLY not a real threat. Right?