

## Fighting Fatigue

*“My mind clicks on and off...I try letting one eyelid close at a time while I prop the other open with my will. But the effort’s too much. Sleep is winning. My whole body argues dully that nothing, nothing life can attain, is quite so desirable as sleep.”*

– Charles Lindbergh, describing the fatigue that struck him nine hours into his 33-hour solo Atlantic crossing.

At one time or another we’ve all experienced an overwhelming desire to sleep. It’s the most pronounced symptom of fatigue, and it’s a decidedly uncomfortable feeling when you’re at the controls of an airplane.

In reality, though, there’s a lot more to it than the risk of dozing off in the cockpit. “Fatigue” is a catch-all term for an often insidious condition that can degrade pilot performance in a number of different areas, from vision and coordination to memory, concentration, mood, and judgment. A study published in Nature magazine showed that people who stay awake for 17 hours straight function at a level similar to those with a blood-alcohol content of 0.05 percent—beyond the legal limit for flying.

In this Safety Brief, we’ll look at some of the things that can lead to fatigue, and some steps you can take to keep it from catching up with you in the cockpit.

### Sleep Issues

The most obvious cause of fatigue is a lack of sleep. Different people need different amounts of sleep, but for most adults the critical amount is between seven and eight hours a night. Modern life being what it is, though, it’s easy to get less than you need...and if “run-down” becomes “normal,” you may not realize how diminished your faculties have become. Difficult as it can be, though, the only real cure is getting a full night’s rest on a



*Don’t shrug off the signs of fatigue in the cockpit. If you’re getting tired, start looking for places to land.*

consistent basis: One good night of sleep won’t make up for days of sleep deprivation.

Still, quantity and quality of sleep aren’t always the same thing. That’s true for several reasons, one of which is the fact that the human body has its own internal clock, a “circadian rhythm” set by external cues (primarily daylight and darkness). It’s the reason why we’re generally sleepy at night and active during the day.

It’s not difficult to throw your clock out of sync. Pilots of fast, long-range aircraft can easily cross several time zones in a single bound, disrupting their circadian rhythms and miring themselves in a groggy, low-energy state commonly known as jet lag.

### Sleeping Smart

Here are a few tips that can help you get the best sleep possible:

- Avoid exercise within 2-3 hours of bedtime.
- Avoid caffeine and alcohol within 4-5 hours of bedtime.
- Eat a light snack before you turn in. Don’t go to bed hungry or full.

### Daytime Sleep

If you need to sleep during the day, take some time to mentally “unwind” before you go to bed. Darken the room as much as possible, or wear eye shades; you may also want to wear ear plugs or use a white-noise generator. Finally, lower the thermostat: It’s easier to sleep in a cool room.

### Fatigue Accidents

Click the links below to read about fatigue-related accidents in the ASF Accident Database.

- [2/17/04: Dodge City, Kansas](#)
- [7/8/04: Waubun, Minnesota](#)
- [11/13/06: Mill Creek, Indiana](#)
- [3/9/07: LaCrosse, Wisconsin](#)
- [12/7/07: Woodland, Alabama](#)

But jet lag isn’t the only way to end up at cross-purposes with your body’s clock. For general aviation pilots, end-of-the-day flights are more often the problem. Here’s a common scenario: A pilot makes an early-morning departure, flies several hours, spends the day in a meeting, and then flies home the same evening.

That may not sound so bad—but take a closer look. It’s easy to gloss over all the little things that can cause stress and fatigue on such a trip, but those “little things” add up, and their cumulative impact can be tremendous.

Consider just a few of the potential problems. It can be difficult to sleep the night before an important trip. Preparing for a cross-country flight can be stressful, particularly if the weather is marginal and it’s important to get to the destination. There always seem to be delays: Airplanes have mechanical problems; weather leads to ATC reroutes; rental car reservations get mixed up. To make up for lost time, meals get skipped. And that’s just

getting to the meeting, which may itself involve conflict and difficult decisions.

With that in mind, take another look at the situation. By the time the meeting is finished, the pilot will have been awake for more than 12 stressful hours (a good portion of which was spent at altitude). Now he or she will be flying single-pilot IFR, at night, in a high-performance airplane—and doing it at a time when the body naturally wants to “call it a day.” It’s a situation that can easily demand more than a pilot is physically or mentally able to give.

Family travel can be just as fatiguing. Many of the same issues that crop up on business trips—passenger expectations, pressure to get home before a certain time—also cause trouble for pilots who fly cross-country for the holidays, or take the airplane on vacation. The circumstances are very different, but the factors that lead to fatigue are much the same.



*Especially when flying single-pilot, avoid late-night flights.*



### Power Naps

If you're feeling drowsy, a short nap of 15 or 20 minutes can be a very effective way to regain alertness and decision making ability. It's generally best to keep naps short in order to avoid entering the deep part of the sleep cycle. Longer naps, and naps taken during normal sleeping hours (i.e., at night), often lead to more severe "sleep inertia"—that groggy, drowsy feeling after you wake up.

Simple as it sounds, the best advice is to stick to as normal a schedule as possible. Don't put yourself in "need to get home" situations. If you know it's going to be a long day, plan to spend the night and depart the following morning. Avoid flights that arrive after 10 p.m., and if you can't, make an effort to get plenty of preemptive rest and consider bringing another pilot along to help out. Whatever the situation, remember that the flight can always be delayed. If you feel any serious concern about your level of fatigue, *stay on the ground*.

### Other Factors

Although a lack of sleep is normally the underlying cause of fatigue, a number of other factors can affect how tired we feel, and how well we're able to perform in the cockpit. For a list of common contributing factors, and suggestions for dealing with them, see the box at right.

Contributing Factors	
<b>Dehydration</b>	<ul style="list-style-type: none"> <li>• Drink plenty of fluids throughout the day</li> <li>• Bring a bottle of water with you</li> </ul>
<b>Hunger/Digestion</b>	<ul style="list-style-type: none"> <li>• Eat several small meals during the day</li> <li>• Keep a few snacks in your flight bag</li> <li>• Avoid large meals before flights</li> </ul>
<b>Cockpit Environment</b>	<ul style="list-style-type: none"> <li>• Use a noise-cancelling headset</li> <li>• Bring a passenger: It's easier to stay awake when you have someone to talk to</li> <li>• Even better, bring another pilot to lend a hand</li> </ul>
<b>Illness</b>	<ul style="list-style-type: none"> <li>• Be honest with yourself about how well you'll be able to perform</li> <li>• Be prepared to cancel the flight</li> </ul>
<b>Medication</b>	<ul style="list-style-type: none"> <li>• Check that the medication is FAA-approved, and follow any warning labels</li> <li>• Be extra cautious if it's your first time taking the medication</li> </ul>
<b>Hypoxia</b>	<ul style="list-style-type: none"> <li>• Avoid flying above 5,000 msl at night without oxygen, 10,000 msl during the day</li> <li>• Learn to recognize the signs of hypoxia</li> <li>• Be particularly cautious if you're a smoker</li> </ul>



Consider using oxygen above 10,000 msl during the day, and 5,000 msl at night.

### Recognizing Fatigue

The war against fatigue has two fronts: prevention and recognition. On the latter, we all know the obvious “red flags” (yawning, heavy eyelids), but it’s important to stay alert to more subtle signs as well. Some people notice a ringing in their ears, while others have difficulty with tasks that require dexterity or coordination. Fatigue can also lead to noticeable cognitive and behavioral changes. Many people find themselves feeling irritable, losing focus in the middle of extended tasks (checklists, for example), or having trouble making relatively simple decisions.

### Ways to Wake Up

If you find yourself getting tired in the cockpit, here are a few ways you can stay alert:

- *Drink a caffeinated beverage.* Don’t over-do it, though: You can end up with a “caffeine hang-over.”
- *Keep your mind active.* Look for emergency landing spots, listen to an ATC frequency, start a conversation with a passenger—whatever works.
- *Open a vent and turn down the heat.* The rush of the wind and the cool air at altitude can help you stay awake. “Cozy” isn’t good when you’re tired.
- *Start using oxygen, or consider descending.* If you’re sure you have sufficient altitude, descending can help alleviate any hypoxia-related fatigue you may be feeling.

The key is self-assessment—knowing your personal signs of fatigue, and actively looking out for them. If you start noticing physical or mental issues, don’t just continue with business as usual. If you’re on the ground, it’s probably wise to stay there. If you’re airborne, do what you can to remain alert and consider diverting to a nearby airport. And if you’re already starting to nod off, it’s simple: Get the airplane on the ground as soon as practical.



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