

STEVE SPARKS



# Defensive Flying

## *Being Prepared for the Unexpected*

**M**uch like defensive driving, defensive flying involves staying one step ahead of the curve when it comes to safety. As we drive to the airport in preparation for an upcoming flight, we are bombarded with opportunities to exercise defensive driving skills and elude potential danger. Most of us have experienced situations involving drivers who exceed speed limits, text while driving, ignore traffic signals, or fail to pay attention — period. In a similar way, navigating an aircraft — on taxiways and in airways — can be quite challenging. It's a jungle out there!

The principle behind defensive flying is to never assume that other pilots, air traffic controllers, ground personnel, or even Mother Nature are looking out for your safety. Because pilots are human, we often get trapped in our own tiny universe and forget to consider the bigger picture. In certain cases, we have to defend against our own miscalculating and complacent ways to prevent events that could lead even the most experienced aviators down the wrong path. However, with a proper plan and good situational awareness, you'll be much better prepared for the various factors that can adversely affect aviation safety.

### **Proper Preparation**

As with any complicated task, mental preparation plays a key role in successfully flying an aircraft. It may be a cliché, but when it comes to aviation, it is certainly true that what you get out of it depends on what you put into it. Whether a particular flight involves training, a cross-country, or a practical test, the amount of preparation is usually reflected in the

overall results. It's always better to over prepare for a flight than to be caught off-guard and be surprised by the unexpected. These situations are no fun for any pilot or passenger.

A great habit before any flight is to mentally rehearse the event from start to finish. Think through the flight as planned, but develop contingencies should the flight have to change due to weather, mechanical problems, or other unforeseen conditions. It's much easier to execute a well-thought-out contingency plan than it is to make radical decisions during flight. Prior planning eliminates a lot of pressure from pilots and can increase safety exponentially.

Another advantage of a pre-constructed alternative flight plan is that it allows the pilot to make small adjustments as opposed to reacting to circumstances that could have been mitigated from the very start. Pilots who approach flying activities using a defensive mentality often experience greater satisfaction knowing they have thought through various safety options beforehand and haven't left much to chance. Well-thought-out tasks that have been prepared for on the ground often yield positive results when decisively executed in flight.

### **Mental Preparation Before Takeoff**

Good mental preparation before any takeoff should always be of high priority for the pilot-in-command (PIC). Too often, pilots don't think enough about preparing for the unexpected during the takeoff and initial climb segments of the flight. Whether it's the first takeoff of the day or the tenth, a lot can go wrong if the pilot isn't expecting the unexpected.

An excellent way to prepare for any surprises on takeoff is to develop a mindset of expectation: Before each takeoff, mentally tell yourself that “today is the day that I’m going to have an engine failure or an unusual occurrence on takeoff.” Though it might sound overly pessimistic, this mental exercise can reduce the chance of being caught off guard. Whether flying solo or with passengers, pilots who perform this mental rehearsal can shave precious seconds off response times when reacting to unusual events during takeoff. Research reveals that it can take as much as seven to eight seconds for pilots to properly respond to a startling/unexpected event in the cockpit. Simply put, performing these “what if” scenarios can help train the mind to respond positively in less time.

### Checklists, SOPs, and Discipline

The use of approved checklists and standard operating procedures (SOPs) while maintaining professional discipline can influence a pilot’s ability to handle unusual circumstances in the cockpit. As stated in Title 14 Code of Federal Regulations (14 CFR) section 91.103, pilots are required to be aware of all available information in connection with any given flight. Taking this rule seriously means hitting every listed item and primes the pilot to be aware of all available resources. Such awareness can increase safety and improve overall enjoyment of the flight — which is, after all, why we fly.

SOPs can help prevent unfortunate circumstances from occurring by preparing pilots to handle both normal and abnormal events. Many pilots believe SOPs exist only for crew members flying large aircraft involving part 121 and 135 operations. Wrong! Every pilot should develop and implement SOPs for all flight operations, regardless of the type of operation being conducted. SOPs add structure and an enhanced level of safety by helping the pilot implement best practices and techniques applicable to many situations.

Appropriate checklist usage is another resource pilots can use to deal with abnormal and emergency situations in the cockpit. Unfortunately, many pilots allow the habit of using a checklist to fade over time. Remember, though, that appropriate checklist usage is a resource available for improving performance and enhancing safety. Even if you fly the same aircraft all the time, use the checklist because complacency kills.

### What Did I Miss?

Since most instrument approaches end with a successful landing, many pilots are often caught by surprise when having to fly the missed approach procedure. If not properly prepared for or briefed, going missed can be a highly complex and challenging event.



Preflight planning contributes to your overall preparation for a flight.

Having a false sense of security on an instrument approach can lead to disastrous results. Because missed approach procedures are executed close to the ground at low airspeed pilots can rapidly become task saturated in “dirty” aircraft configurations. Pilots who are mentally prepared and physically triggered to fly the missed approach prior to starting the procedure are much more likely to execute it successfully.

---

**The use of approved checklists and SOPs can influence a pilot’s ability to handle unusual circumstances.**

### Preparation from Beginning to End

Preparation is a key ingredient for successful flying. Proper pre-flight planning and good mental preparation pay huge dividends for pilots who take into consideration the expected and unexpected circumstances that might influence the safety of each flight.

As with most plans, flight plans are likely to change on a near-constant basis. It is thus incumbent upon the pilot to develop every flight plan with contingency and flexibility in mind. Thorough preparation provides a solid foundation for safety and professionalism. Safety starts before we get into our aircraft and ends only when we’ve secured it after landing. ✈️

---

**The principle behind defensive flying is to never assume other pilots, air traffic controllers, ground personnel, or even Mother Nature is looking out for your safety.**

---

*Dr. Steve Sparks is an aviation safety inspector at the Wichita FSDO specializing in part 141 flight schools, human factors, helicopter operations, and educational outreach initiatives. He is a certificated flight instructor for both airplanes and helicopters.*