



Controlled Flight Into Terrain

Technological advances in situational awareness have dramatically reduced the number of General Aviation Controlled Flight Into Terrain (CFIT) accidents over the past 20 years. Nevertheless, CFIT accidents continue to occur and at least half of them are fatal. This fact sheet will help acquaint readers with the precursors of CFIT accidents and highlight some technological and safety risk management solutions.

What is CFIT?

CFIT is defined as an unintentional collision with terrain (the ground, a mountain, a body of water, or an obstacle) while an aircraft is under positive control. Most often, the pilot or crew is unaware of the looming disaster until it is too late. CFIT most commonly occurs in the approach or landing phase of flight.

Accidents where the aircraft is out of control at the point of impact are **not** known as CFIT. Rather, they are considered uncontrolled flight into terrain. Similarly, incidents resulting from deliberate acts, such as terrorism or suicide by the pilot, are also not considered to be CFIT.

In a typical year, there are about 40 CFIT accidents, about half of which are fatal.

Why Does it Happen?

Pop Quiz: CFIT accidents occur primarily at night. True or False? Surprisingly, the answer is false. It's logical to think that CFIT accidents usually involve inexperienced pilots in dark night and/or instrument meteorological conditions. In reality though, more than 75 percent of CFIT accidents in a

typical year occur in daylight and more than half of those are in visual conditions. Although pilots involved in most CFIT accidents are not instrument-rated, more than 30-percent hold an instrument rating.

As far as CFIT accident precursors, continued Visual Flight Rules (VFR) into Instrument Meteorological Conditions (IMC) is the deadliest, proving fatal in most cases. The General Aviation Joint Steering Committee (GAJSC) did a study on a group of 41 CFIT accidents. Eleven, or 25-percent of these accidents were preceded by continued VFR into IMC and *all* of them were fatal. Six of those pilots were instrument-rated, five were not.

Another big factor in CFIT accidents is wire strikes. You might think most wire strikes are confined to agricultural flying, but more than half do not involve this type of operation. Accident data



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also shows that wire strikes often occur below 200 feet above ground level. If you've got to fly low, give yourself some room. A little extra altitude – even 500 feet – will keep you above 90-percent of the wires.

Other top causes of CFIT are IFR procedural mistakes (e.g., flight below minimum enroute altitude, descent below MDA) and unrealistic aircraft performance expectations (e.g., high density altitude, tailwinds on approach). To avoid these pitfalls, make sure you're in compliance with all aspects of the clearances you accept and the procedures you fly. Equally important is to thoroughly research the environment you plan to operate in, especially at high altitudes and/or with short or obstructed runways.

How Can I Avoid CFIT?

Safety Risk Management (SRM) is a vital part of warding off a possible CFIT accident. It involves knowing what you're getting into and understanding what capabilities and resources you have that will ensure a flight is completed safely. This starts at preflight. Make use of a Flight Risk Assessment Tool (FRAT) and the PAVE acronym (**P**ilot, **A**ircraft, **E**n**V**ironment, and **E**xternal Pressures) to help you build a personalized risk assessment before a flight.

During flight, you also need to stay vigilant to any changing conditions, like deteriorating weather, fuel status, and the onset of fatigue. Be ready and willing to adjust your plans. Don't let Plan Continuation Bias (aka Get-there-itis) lure you into making a poor decision. Having a Plan B at the ready can make a route change much easier to rationalize and accept.

There are a host of technological programs, applications, and devices that can aid pilots in situational awareness and risk assessment (e.g., moving maps with terrain overlays). In fact, pilots have access to more information than ever before and that has already contributed to a 20-year

reduction in CFIT accidents. But all that information comes in many different forms so pilots must be thoroughly familiar with and proficient in device operation and information interpretation. Technology can also lead to unwanted distractions so remember to always Fly the Aircraft First!

Tips and Best Practices

Keep your skills sharp between flights by flying simulators or flight training devices. Many feature realistic graphics so you can get a look at



unfamiliar destination environments. And you can practice instrument procedures before you have to fly them for real. But remember, simulation is not adequate preparation for flights to unfamiliar and/or challenging environments. Therefore you should also make it part of your plan to get regular proficiency training with a flight instructor. Of course we recommend FAA **WINGS** Pilot Proficiency Training, but no matter what program or instructor you choose, try to include scenario-based training.

Finally, be sure to give yourself some breathing room. That means at least a mile from airspace and 2,000 feet vertically from terrain you're trying to avoid. And since weather is very dynamic, you may consider even greater clearance distances to avoid any unexpected IMC.

Resources

- ◆ Advisory Circular 61-134, GA CFIT Awareness
https://www.faa.gov/documentLibrary/media/Advisory_Circular/ac61-134.pdf
- ◆ CFIT Video —What More Can We Do?
<https://youtu.be/JBxg6hgbAr8>

