CFIT/Automation Overreliance

Technological advances in situational awareness have dramatically reduced the number of GA Controlled Flight Into Terrain (CFIT) accidents. However, the General Aviation Joint Steering Committee (GAJSC) has found that reliance on automation is a precursor to CFIT events. Awareness of automation limitations and pilot proficiency in flying with and without automation are key to safe flight operations.

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

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.

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 (IMC). 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 IMC is the deadliest, proving fatal in most cases. The 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.

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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 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.

Technology Traps

Another key precursor for CFIT is a pilot's overreliance on automation. This can lead to pilot complacency and degraded hand-flying competence and confidence.

Automation is by no means a bad thing; today's autopilots with associated navigation equipment can greatly reduce cockpit workload and help pilots fly with greater precision and accuracy. However, pilots must be keenly aware of an automation system's capabilities and limitations. That means understanding when your system is operating normally, and when a failure mode requires you to step in and fly manually. Automation systems are also dependent on good data to fly precisely, so be on the lookout for any faulty sensor input that could lead to an inappropriate response.

Most GA autopilots will hold a heading and many will hold altitude as well. These features have led to surprises though. Pilots flying on autopilot at night have failed to notice ice accretion until the autopilot disconnects when it can no longer maintain altitude. And lateral fuel imbalances, that you'd be sure to notice while hand flying, can be masked by the autopilot until it disconnects, because it can no longer keep wings level. Many GA autopilots also lack the ability to integrate aircraft position and terrain information, so it's imperative to maintain adequate terrain and obstruction clearance when hand flying or on autopilot.

Creeping Complacency

The most insidious aspect of automation is its propensity to breed complacency and erode pilot confidence. The more time we spend on autopilot, the less time is available to maintain our hands-on skills. Instrument approaches on autopilot are so precise that it's tempting to "let George do it" all the time. But how would you feel if "George" decided to take a break in the middle of an instrument approach? Strive to achieve a balance between hands-on and automated flying.

Tips and Best Practices

Here are some tips for a successful human/automation relationship:

⇒ Understand how your automation works and how it behaves when it isn't working.

⇒ Understand where your automation is getting its information and how it will respond if that info is missing or flawed.

⇒ Know all the ways to quickly disconnect your automation and revert to hand flying.

⇒ Practice hand flying regularly to keep your skill and confidence levels high — sims work well too.

⇒ Commit to regular proficiency training like the FAA ***WINGS*** Pilot Proficiency Training.

Resources

- **Advisory Circular 61-134, *GA CFIT Awareness***
  bit.ly/2Oq0bEf
- **CFIT Video — What More Can We Do?**
  youtu.be/JBxg6hgbAr8