



# IHST

**International Helicopter Safety Team**

Our Goal is to Reduce the Civil Helicopter Accident Rate by 80% by 2016.

## *Training Fact Sheet – Controlled Flight into Terrain*

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### **Controlled Flight into Terrain (CFIT) – How Does it Happen?**



Controlled Flight into Terrain, or CFIT, occurs when an airworthy aircraft under the control of a pilot is flown unintentionally and without prior awareness into terrain, water, or an obstacle.

CFIT ranks as the 13<sup>th</sup> most common of helicopter accident types. Despite its frequency, helicopter pilots may find it difficult to relate to the concept of unknowingly flying their aircraft into the ground. Many in-flight emergencies can be detected and require a specific course of corrective action. However, when CFIT occurs, the pilot usually learns of the emergency the same instant the helicopter impacts terrain. Therefore it is important for pilots to understand what conditions and actions lead to CFIT, so that they can recognize and avoid these hazards to prevent the accident.

### **Helicopter Operations**

The nature of many helicopter operations exposes helicopter pilots to greater risk of CFIT. It is common for helicopters to fly at low altitudes or adjacent to terrain, increasing the likelihood of CFIT should a loss of situational awareness

occur. The FAR's allow helicopters to operate at lower altitudes and weather minimums than airplanes. This puts greater responsibility on the helicopter pilot to ask him or herself "I *am* allowed to do this, but *should* I?" With a good analysis of risk factors including aircraft capabilities, operation type, pilot abilities, and environmental conditions, the correct answer is often "no". Setting personal minimums for weather and cruising altitudes can help pilots to eliminate external pressures that can skew their decision making process, and create a margin for error in case of a lapse in situational awareness. The act of establishing minimums, however, does not prevent accidents by itself. The true test arises when marginal conditions threaten an important flight. The pilot must hold strictly to those personal minimums. It will take a great deal of discipline to maintain a safety margin, but the decision to do so may save the pilot's life.

### **Visibility and Weather**

CFIT is often associated with low visibility or night flights in mountainous terrain. These conditions do create an extreme hazard of CFIT because pilots often rely on their eyes to identify danger. Pilots should approach low visibility or dark night operations with extreme caution. Flying over unlit areas at night should be avoided when possible. Otherwise, maintain a higher altitude than normal when flying at night to ensure clearance over terrain and obstacles. Thorough planning and weather briefings before flights can prevent encountering hazardous low visibility conditions, day or night. If flight in low visibility is necessary due to operational requirements, good situational awareness is critical. A frequent scan of flight instruments used in combination with VFR charts is necessary to ensure clearance of nearby terrain. Additionally, it is crucial that pilots constantly

reassess the current flight conditions as well as their decisions. Just because the “Go” decision was made does not mean the flight must be completed as planned. Early recognition of potential CFIT conditions can allow a pilot to stop the error chain and prevent an accident. Land as soon as possible when visibility or conditions deteriorate.

## Situational Awareness

It is a fact that CFIT accidents often take place in low visibility scenarios and in mountainous terrain. However, CFIT accidents are not limited to those conditions, and many take place on flat or rising terrain as well. Furthermore, studies show that half of CFIT helicopter accidents took place in VMC conditions. These statistics demonstrate that CFIT is caused by more than just weather phenomena. Ultimately, loss of situational awareness causes these crashes. Distractions, high workload, or fixation on certain flight elements can lead to a potential CFIT scenario. Pilots must maintain a clear mental picture of their helicopter’s location relative to the terrain and objects around it. Understanding that CFIT can take place in any phase of flight, in all weather conditions, and during both day and night is one step towards preventing its occurrence. Good pilot judgment and flying within aircraft and pilot capabilities will further reduce its likelihood.



## Eliminating CFIT

New technology makes maintaining situational awareness easier for helicopter pilots. The Enhanced Ground Proximity Warning System (EGPWS) presents pilots with positional awareness relative to terrain that is easy to see and understand. This type of instrument is slowly being introduced to new aircraft, but it may never be standardized for smaller or GA aircraft, which statistically are most prone to CFIT accidents. Advances in avionics can prove helpful, but ultimately it is the PIC who prevents

CFIT. Therefore, take CFIT seriously in your preflight planning and in your cockpit decision making. Be diligent in your instrument scans and always maintain situational awareness, especially when workload is high. Set personal minimums that will give you an extra margin of safety. Together we can eliminate CFIT from the list of common accidents.



## Summary

- The key to avoiding CFIT is diligence in maintaining situational awareness throughout flight, and using the appropriate tools to do so.
- Despite advances in cockpit technology and navigation, CFIT accidents continue to take place.
- CFIT occurrences take place in all types of conditions and terrain.
- It is crucial that pilots recognize the hazards of operating in low visibility at low altitudes.

## References

Further information can be found in Ch 17 of the Helicopter Instructor’s Handbook at <http://www.faa.gov/library/manuals/aviation/media/FAA-H-8083-4.pdf> and in Ch 14 of the Helicopter Flying Handbook at <http://www.faa.gov/library/manuals/aircraft/media/faa-h-8083-21A.pdf> and in the Reality of Aeronautical Knowledge at [http://www.ihst.org/portals/54/Reality\\_Aeronautical\\_Knowledge\\_21MAY12.pdf](http://www.ihst.org/portals/54/Reality_Aeronautical_Knowledge_21MAY12.pdf) and in AC 61-134 GA CFIT Awareness at [http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgAdvisoryCircular.nsf/list/AC%2061-134/\\$FILE/ac61-134.pdf](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/list/AC%2061-134/$FILE/ac61-134.pdf) or at [www.IHST.org](http://www.IHST.org)